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CIVIL ENGINEERS

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NEW YORK 1923

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ALFRED NOBLE MEMORIAL COMMITTEE: Samuel Rea, Bion J. Arnold, Onward Bates, J. Vipond Davies, George Gibbs, William W. Harts, S. H. Hedges, J. W. Lieb, F. H. Newell, Robert Ridgway, J. Waldo Smith.

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Items of Interest*

Status of the Davis Case

The Society on October 17, 1923, at the Fall Meeting in Richmond, Va., unanimously endorsed the action of the Board of Direction of the Society in recommending sending the following letter of protest to Secretary of Interior Work for his action in removing A. P. Davis, Past-President, Am. Soc. C. E., as Director of the Reclamation Service, and his statement that engineers are not qualified to direct Government irrigation:

"HON. HUBERT WORK,
SECRETARY OF THE INTERIOR,
Washington, D. C.

"SIR.—Your courteous reply of Aug. 14 to our inquiry of June 27 has been very carefully considered, and the whole matter of your dismissal of Director A. P. Davis, of the Reclamation Service, has been investigated by this Board, aided by a special committee of two fair-minded engineers, widely experienced in public service and business affairs, one of whom is an honorary member and the other a past-president of the Society. We regret to have to state that after mature deliberation we feel constrained to protest against your action with the utmost vigor.

"1. Because the dismissal, made so suddenly and but little over three months after you became Secretary, was arbitrary, and was unjust to a highly efficient and experienced public official, a most eminent civil engineer of long recognized national and international standing in his profession, whose high qualifications you yourself have certified by offering to make him consulting engineer of the Reclamation Service.

* Members are urged to contribute items of general interest.

"2. Because the action necessarily must undermine the morale and loyalty of the whole Reclamation Service, tending to substitute political standing for merit and leading to the danger that the public funds may be wasted through inefficiency. Similar action applied to other technical bureaus would demoralize the entire technical and scientific service of the government.

"3. Because the action was taken by the device of nominally abolishing the position and immediately creating its equivalent under another name, a subterfuge which, as we are informed, it has been attempted to legalize by an *ex post facto* executive order.

"Furthermore, the charge repeatedly has been made in the press and without denial by you that your offer to retain Mr. Davis as consulting engineer of the Reclamation Service was on condition that he omit to state that his resignation was requested by you. To this fact your letter contained no reference.

"4. Because there is great danger that the effect of your actions may be eventually to lead to the waste of vast sums of public funds to meet political demands put forward in behalf of selfish private interests. Disagreeing entirely with your views we consider it established that efficient technical bureaus such as the Reclamation Service in the past (with its world-wide recognition as a model for other nations) can meet all just needs of the government irrigation projects. Farmers generally throughout the United States are suffering under present conditions no less than those on reclamation projects. Engineering ability and experience are essential to the direction of the management no less than to the building of reclamation projects.

"5. Because business and engineering ability both are necessary qualifications for the efficient discharge of the duties of the Director of the Reclamation Service, or, as now called, the Commissioner of Reclamation.

"Indeed, the whole engineering profession resents most strongly the slander (implied in your letter) that engineers cannot or at least do not possess business qualifications of the highest order. In transportation, mining, mechanical, electrical and other great industries engineering executives play a most important part. Engineers are presidents of the Pennsylvania R. R., the New Haven, the Delaware and Hudson, the Chicago and Northwestern, the Santa Fe, the Great Northern, the Chicago and Great Western, and many others. Both presidents of our two big electrical companies are engineers; many of our large industrial and manufacturing operations are headed by engineers: in fact, engineers play important parts in the business affairs in a long list of human activities in the United States. The fact that hundreds of thousands of Americans are content to trust investments of billions of dollars to the hands of engineers is ample proof—if any be needed—of the falsity of the charge that engineers are not business men.

"Your explanation, therefore, is inadequate in every respect. Your action is of a character most dangerous as well as unjust. We protest it in the strongest terms.

"Signed:

"Board of Direction of the American Society of Civil Engineers,

"By CHARLES F. LOWETH, *President,*
JOHN H. DUNLAP, *Secretary.*"

The attention of members has been called to the decided stand of the National Civil Service Reform League. The Federated American Engineering Societies and the American Association of Engineers are active in studying the matter. The Special Committee of the Society, composed of John F. Stevens, Hon. M. Am. Soc. C. E., and George S. Webster, Past-President, Am. Soc. C. E., has made an extended study and is expected to report at the Richmond

meeting. An emphatic protest of the Illinois Society of Engineers has reached the Secretary, also a resolution from the Seattle Chamber of Commerce voicing appreciation and endorsement of Mr. Davis' work. Many members have written very frankly, mostly from the standpoint of intimate acquaintance with the Reclamation work and its personnel in the West.

In Washington, the relations seem to be even more acutely strained. Secretary Wallace, of the Federated American Engineering Societies, has taken very strong exception to the reasonableness of Secretary Work's statements, showing many instances to refute the charge that an engineer is not the proper person to handle administrative government business and asserting that "engineers are convinced that the recent change in the policy of the Reclamation Service is fraught with serious potentialities to the scientific branches of the Government."

The most complete treatment of the matter to date is that by the *Washington Herald,* contained in a series of front-page articles in its issues of October 6 to 9, 1923. It enumerates many irregularities in the procedure of the Secretary of the Interior and presages a Congressional investigation. Although Secretary Work has denied the accuracy of the statements, he has refused to discuss them.

Members may await with interest the outcome of these various activities. The maintenance of the high standing of the Profession before the public and in all Government work is no less vital than the phases of personal justice and of Civil Service protection.

Interest of American Engineers in Earthquake Studies

American engineers, and especially members of the Society, are taking an active interest in the lessons of the Japanese earthquake and the precautions for future construction. Acting on the suggestion of several members, Secretary Dunlap called a meeting of representatives of the four Founder Societies at luncheon, on September 26, 1923, at which the following were present: Col. John Millis, U. S. Army (*Retired*), M. Am. Soc. C. E., Cleveland, Ohio; Elmer A. Sperry, M. A. I. E. E., President and Engineer, Sperry Gyroscope Company, New York, N. Y.; Oliver C. Spurling, M. A. I. E. E., Assistant General Superintendent, Western Electric Company, New York, N. Y.; J. A. L. Waddell, M. Am. Soc. C. E., Consulting Engineer, New York, N. Y.; Frank C. Wight, M. Am. Soc. C. E., Managing Editor, *Engineering News-Record,* New York N. Y.; Otis E. Hovey, M. Am. Soc. C. E., Assistant Chief Engineer, American Bridge Company, New York, N. Y.; Clifford M. Holland, M. Am. Soc. C. E., Chief Engineer, New York State Bridge and Tunnel Commission, and New Jersey Interstate Bridge and Tunnel Commission, New York, N. Y.; John H. Dunlap, Secretary, American Society of Civil Engineers; F. F. Sharpless, Secretary, American Institute of Mining and Metallurgical Engineers; William E. Bullock, Assistant Secretary, American Society of Mechanical Engineers; and Henry E. Farrer, Assistant Secretary, American Institute of Electrical Engineers.

After thorough discussion, the consensus of opinion was voiced by the unanimous passage of a motion "that it is the sense of this meeting that the

American Society of Civil Engineers should appoint a committee to conduct the proposed investigation of the effects on structures of the earthquakes in Japan and elsewhere, that the three other Founder Societies offer their co-operation, and that the Engineering Societies of other nations be invited to co-operate." Accordingly, President Loweth appointed as a Committee three members from San Francisco, Calif., with previous experience in earthquake investigation, Messrs. J. D. Galloway, Chairman, C. H. Snyder, and C. B. Wing, also Col. Millis of Cleveland, who is responsible in large measure for undertaking the study. Three Japanese engineers, Teiji Ebashi, Assoc. M. Am. Soc. C. E., Osaka, Japan, suggested by John Lyle Harrington, M. Am. Soc. C. E.; Masayoshi Kabashima, Assoc. M. Am. Soc. C. E., Tokyo, Japan, suggested by J. A. L. Waddell, M. Am. Soc. C. E.; and Baron Hempei Nagao, Tokyo, Japan, suggested by John F. Stevens, Hon. M. Am. Soc. C. E., have been asked to serve as consulting members and to suggest each an additional member. All other engineers who may be able to contribute information bearing on this subject, which is literally of world-wide interest, are urged to communicate all available data to John H. Dunlap, Secretary, American Society of Civil Engineers, 33 West 39th Street, New York, N. Y.

It will be recalled that following the catastrophe in San Francisco, in 1906, the San Francisco Section of the Society undertook a similar investigation of the damages done by the earthquake to structures in that region, which study* resulted in the collection of much data of great scientific value to engineers throughout the world.

As a possible result of this former work, it is reported by the U. S. Department of Commerce that American steel concrete buildings in Tokyo and Yokohama withstood the latest shocks and are in good condition. The Department officials have expressed their gratification over the first practical demonstration of the effectiveness of the new so-called earthquake-proof factories and office buildings which have been constructed within the last three years. There were about six of these buildings in Tokyo. The fact that this construction has been proof against earthquakes is likely to influence favorably its adoption in the future.

Secretary Dunlap has written to secure advice and assistance from many foreign engineering societies, in England, France, Italy, and elsewhere. These studies, both as affecting Japan and other nations, should place on record engineering data which will be of great service to future generations in reducing loss of life and capital investment from earthquake shocks.

Eads Memorial

The Chairman of the Committee on the Eads Memorial Fund, E. E. Wall, M. Am. Soc. C. E., reports satisfactory progress of the project to erect a memorial to Capt. Eads in the Hall of Fame. Contributions to the extent of approximately $3 650 have warranted the Committee in making definite contracts for the bust. It is anticipated that the unveiling will take place in May, 1924, and that the Society will take a large official part in the exercises.

* *Transactions*, Am. Soc C. E., Vol. LIX (1907), p. 208.

Co-Operation between National Engineering Societies

Close co-operative effort on the part of the four Founder Societies seems probable in the near future as a result of conferences of a Joint Committee appointed to facilitate combined endeavors. The Board of Direction, on April 16, 1923, authorized President Loweth to appoint a Committee of five, with himself as Chairman, to work with similar committees from the other Societies "with a view to formulating some permanent workable method of joint co-operation on public matters, and report its recommendations to the Board." The other members of this Committee were Messrs. W. T. Chevalier, A. H. Markwart, Leonard Metcalf, and Charles H. Paul. This action was supplemented by similar appointments by the other Societies.

As a result of a meeting of this Joint Committee, a Sub-Committee was appointed, consisting of the Presidents and Secretaries of the four Founder Societies, and authorized to report on specific fields of joint effort and the means of conducting such work. These matters formed the subject of a meeting of the Sub-Committee on October 1, 1923, at which were present President Loweth and Secretary Dunlap of the Society, President Mathewson and Secretary Sharpless of the American Institute of Mining and Metallurgical Engineers, President Harrington and Secretary Rice of the American Society of Mechanical Engineers, and Dr. F. B. Jewett and Calvert Townley representing President Ryan and Secretary Hutchinson, respectively, of the American Institute of Electrical Engineers. The form of report was thoroughly discussed and unanimously adopted.

Following these studies, it is expected that some permanent medium for co-operative action of the four Founder Societies will be instituted.

Copies of Special Committee Reports Available

Separate copies of the Final Report on Specifications for Design and Construction of Steel Railway Bridge Superstructure submitted by the Special Committee on Specifications for Bridge Design and Construction (Henry B. Seaman, M. Am. Soc. C. E., *Chairman*), and of the Third Progress Report of the Special Committee on Stresses in Railroad Track (Arthur N. Talbot, Past-President, Am. Soc. C. E., *Chairman*), as reprinted from Vol. LXXXVI (1923) of *Transactions*, are now available, at a cost of $0.60 and $1.65, respectively, the usual discount being allowed to members.

American Peace Award

The invitation to the Society to participate in the work of the American Peace Award was mentioned in the September, 1923, *Proceedings*. The Executive Committee of the Society authorized President Loweth to appoint a representative, it being stipulated that the Society was not obligated in any way by this action. William Barclay Parsons, M. Am. Soc. C. E., accepted such appointment and attended the meeting of the Policy Committee of the Award. He reports that no less than 7 000 plans for World Peace have already been submitted.

Test Code for Hydraulic Power Plants and Their Equipment

After about six years of endeavor, the Joint Committee on Testing of Water Wheels has formulated and issued (under the auspices of the American Society of Mechanical Engineers) a Test Code for Hydraulic Power Plants and Their Equipment. The attractive form of this pamphlet, the logical arrangement, and the intelligible diagrams, give information of value to practicing engineers or students alike.

The first part of this Code describes concisely the various methods of measuring water, head, and power, the operating conditions, records, and calculations, including forms for tabulating data and results. The second half is devoted to a summation of instruments and apparatus and their use, both for power and for water measurement. Of especial interest is the description, in condensed form, of present practice in velocity measurement, including the salt solution, Pitot tube, Venturi meter, weir, current meter, traveling screen, color, and salt velocity methods.

The representatives of the Society on this Committee are Clemens Herschel, Past-President, Am. Soc. C. E., and B. F. Groat and N. A. Carle, Members, Am. Soc. C. E. The Chairman, William F. Uhl, Charles M. Allen, John A. Walls, John L. Harper, and Chester W. Larner, Members, Am. Soc. C. E., are also among its personnel.

Copies of this instructive report may be obtained from the American Society of Mechanical Engineers, 29 West 39th Street, New York, N. Y., at a cost of 70 cents each to members, or 80 cents to non-members.

Conference of National Standardizing Bodies

During the past Summer, there was held at Zurich, Switzerland, the Second Conference of the Secretaries of National Standardizing Bodies. Among the thirteen organizations represented was the American Engineering Standards Committee, through Mr. P. G. Agnew, Secretary. After thorough and cordial discussion of mutual interests and difficulties, measures were recommended for closer co-ordination among the various countries. This is to be effected by the transfer of information on current activities, interchange of draft standards, and combined financial support of the Conferences. Much benefit to engineering work is anticipated from this liaison between the many National standardizing agencies.

Shows Way to Make Better Lime

Experiments conducted at the U. S. Bureau of Standards have shown a way to improve the manufacture of hydrated lime so that the grade known as "finishing" hydrate is regularly produced instead of that known as "mason's" hydrate which, because of its lesser plasticity, commands a lower price. These tests have shown that plasticity depends not only on the colloidal content of the hydrate, but on the effect on this colloid of the manufacturing process. The colloid, like glue, must not be allowed to dry out during the manufacturing process, and it must also be prevented from flocculating itself when the mixing water is added preparatory to use.

It has been found that the drying out can be prevented by letting the freshly made hydrate cool in an atmosphere of steam, while flocculating can be prevented by adding small quantities of a readily soluble calcium salt. A hydrator designed to apply these principles has just been completed for further experiment.

Safety Code for Construction Work

Under the general auspices of the American Engineering Standards Committee, the National Safety Council is formulating a Safety Code for Construction Work, on which a public hearing was held in Buffalo, N. Y., October 2, 1923. Among other things, the Code hopes to point the way in regulatory laws. It will be helpful also to construction interests as a standard for safe field practice, and although primarily applying to building operations, its provisions may refer readily to all other kinds of construction. In addition to giving complete instructions covering safe equipment appliances and methods, diagrams illustrating the recommendations are included. The National Safety Council, 168 North Michigan Avenue, Chicago, Ill., will gladly furnish additional information regarding this Code.

Studies of Drought and Soil Erosion in South Africa

The Administrator at Bloemfontein, Orange Free State, South Africa, has authorized an investigation of drought and soil erosion, to be carried on by Reenen J. van Reenen, Assoc. M. Am. Soc. C. E., a graduate of Lehigh University, now an engineering official in the Orange Free State. Mr. van Reenen asks for any aid that his fellow conservationists and engineers in the United States can give him by way of information as to conditions here and their remedy. Copies of pamphlets or published discussions, articles, and references to publications will be very helpful, and may be mailed to Dr. Henry S. Drinker, Merion Station, Pa., for forwarding. Members of the Society are earnestly invited to co-operate in this inquiry.

Exhibition of Ordnance

Through the courtesy of the Society of American Military Engineers, members of the National Societies of Civil Engineers and Mining Engineers were permitted to attend a special exhibition of gunnery at the Government Proving Ground, Aberdeen, Md., on October 30, 1923.

The elaborate program arranged by the Military Engineers included demonstrations of all types of ordnance material by the Services which actually use them in battle, including the firing of light and heavy artillery and machine guns; bomb dropping by the new Barling Bomber, the largest plane ever built; a demonstration by the Coast Artillery of modern anti-aircraft defense by firing 3-in. guns against a target in the air, towed by an aeroplane; and an exhibition by the Infantry of the laying down of a smoke barrage and of the use of tanks against machine-gun fire. In this one exhibition more of the machines of war were in evidence than most soldiers are privileged to see in a whole campaign.

The Fall Meeting

The Fall Meeting of the Society at Richmond, Va., October 17-20, 1923, was one of the most successful meetings ever held by the Society. The total

registration was about 500, and 275 were present at the opening session when the meeting was called to order by President Anderson of the Virginia Section.

The morning session of Wednesday, October 17, was devoted to the presentation and discussion of papers relating to Highways. While the meeting was in session, about 125 ladies were taken on an automobile trip which terminated at the Country Club of Virginia where a delightful luncheon was served, at which Mrs. E. Lee Trinkle, the wife of the Governor of Virginia, and Mrs. George Ainslie, the wife of the Mayor of Richmond, were present.

During the afternoon an Informal Conference of Representatives of Local Sections was held, at which 23 were present, the meeting terminating at 4 P. M. Simultaneous meetings of the Highway Division and the Power Division were also held, at which 90 and 60, respectively, were present. At 4 P. M., all the members present and the ladies, a total of about 340, assembled to have a group photograph taken, and then started on an automobile drive about Richmond to points of historic interest. In the evening, a Buffet Supper, at which 310 were present, was served in the Auditorium of the Jefferson Hotel. During the dinner, there was a concert by the Old Virginia Darky Chorus, after which there was informal dancing.

The Thursday morning session, at which 125 were present, was devoted to the presentation and discussion of papers relating to Port Problems. During the morning, the ladies and some of the members, a total of about 70, visited historic landmarks in Richmond. After luncheon, the party went by special train to Williamsburg for an inspection of William and Mary College. The members of the party then visited Jamestown, returning to William and Mary College for dinner, after which they left by motor for Jamestown to embark on the steamer *Southland*. During the moonlight ride on the James River to Norfolk, Va., there was informal dancing.

The *Southland* anchored off Newport News until Friday morning, when it proceeded to Norfolk where the party disembarked for a motor trip to points of interest in Norfolk and vicinity. At the Naval Training Station, a Dress Parade was given by the sailors. Luncheon was served in the rooms of the Chamber of Commerce of Norfolk, after which the party was taken on an inspection trip of the harbor on Government and harbor tugs. The party then re-embarked on the *Southland* for a visit to Old Point Comfort, where Fortress Monroe was inspected. Another stop was made at Yorktown for a visit to the historic points of this old village and the Soldier's Monument. The *Southland* then proceeded up Chesapeake Bay and the Potomac River, arriving at Washington, D. C., on Saturday morning. After breakfast on board the boat, the party was divided into groups, the members visiting the Road Tests at Arlington Farms, Va., and the ladies and those not interested in the tests visiting such points in and about Washington as they desired. The entire party assembled for luncheon at the Wardman Park Inn, as guests of the District of Columbia Section, after which another motor trip about Washington and its environs was taken.

Except for a little rain on Friday the weather was ideal, and the excursions and entertainments provided by the local members were much enjoyed. A complete account of the Fall Meeting will be printed in the December *Proceedings*.

Biographical Sketches of Candidates for Offices to be Filled at the Annual Election, January 16, 1924

Carl Ewald Grunsky

(Candidate for President)

Born April 4, 1855, in San Joaquin County, Calif. (Stockton High School, 1870; Polytechnicum at Stuttgart, Germany, Diplom. Engr., 1877; Eng. D., 1910)—1878-1888 in the State Eng. Dept. of California, successively, as Topographer; in charge of office computation; Asst.; and as Chf. Asst. State Engr., mainly on irrigation, river, hydraulic, and flood-control problems; 1886 to 1899 in private practice at Sacramento, Calif., and, later, at San Francisco, Calif., serving as Engr. in charge of a number of small town sewerage and water supply projects and of irrigation projects; 1889-1890 Member of the Examining Comm. on Rivers and Harbors, California; 1892-1893 Member of Sewerage Comm. of San Francisco and one of the engineers in charge of studies as a basis for an improved sewerage system: 1899, with Marsden Manson, M. Am. Soc. C. E., and C. S. Tilton, as Associates, was Engr. in charge of design of sewerage system for San Francisco; 1900-1904 City Engr., San Francisco, in charge, too, of appraisal of water-works and investigations of avaliable water supply sources; reported on various proposed public utility projects for San Francisco; 1904-1905 Member of the Isthmian Canal Comm.; 1905-1907 Cons. Engr. U. S. Reclamation Service and Adviser to Secretary of Interior: 1908 to date in private practice, at New York, N. Y., and San Francisco to 1910, thereafter at San Francisco; 1910-1914 associated with other engineers under firm name of American Engineering Corporation, and since 1914 as C. E. Grunsky Company; recent work includes 4 years as Cons. Engr. for Imperial Irrigation District and service in similar capacity for a number of other irrigation projects; various appraisals; municipal water supplies; and miscellaneous engineering practice: author of "Topographic Stadia Surveying"; "Valuation, Depreciation and Rate Base", and "Public Utility Rate Fixing."

Lincoln Bush

(Candidate for Vice-President)

Born December 14, 1860, at Palos Township, Cook Co., Ill. (Cook Co., Ill., Normal School, B. A., 1881; Univ. of Illinois, B. S. in C. E., 1888; Doctor's Degree of Eng., June, 1904)—1888-1889 Asst. Engr., Maintenance of Way, Wyoming Div., Union Pacific Ry.; Field Topographer and Field Draftsman, location survey of new line, Ogden to Sioux City; 1890-1891 Asst. Engr. on bridge design and shop inspection with Morrison and Corthell, Cons. Engrs., Chicago, Ill.; 1891-1896 Draftsman and Office Engr. on estimates, designs, etc., Western Office, Pittsburgh Bridge Co., Chicago, Ill.; 1896 Asst. Engr. masonry design of bridges, Chicago Drainage Canal, Chicago, Ill.; 1897-1899 Asst. to Bridge Engr., Chicago, Ill., and Acting Div. Engr., Iowa Div., Chicago and North Western Ry., Boone, Iowa; 1899-1908 with Delaware,

Lackawanna and Western R. R. Co. as Bridge Engr., Prin. Asst. and Bridge Engr., and Chief Engr.; was instrumental in modernizing the facilities of the Company such as shops, bridges, piers, buildings and docks, signals, water supply, grade-crossing elimination, interlocking plants, coaling stations, railroad yards, and re-location of parts of main line: 1909 to date Cons. and Contr. Engr., largely on bridges and viaducts, foundations, railroad terminals, arbitration and expert engineering service.

Oscar Sidney Bowen

(Candidate for Vice-President)

Born December 3, 1867, Salisbury, Mo.—1887 Chainman, Rodman, and Draftsman, Coeur d'Alene Ry. & Nav. Co., on location and construction; Topographer and Draftsman, Washington & Idaho Ry., on location: 1888 Topographer and Draftsman, Seattle, Lakeshore & Eastern Ry. & Nav. Co., on railway location: 1889-1891 Spokane Falls & Northern Ry., Chief Draftsman in general charge of Chf. Engr.'s office, on location and construction; also, Transitman on location; and Asst. Engr., maintenance work: 1892-1893 Nelson & Fort Sheppard Ry., Locating Engr.; and Asst. Engr. in charge of construction of bridges: 1894-1899 Chf. Draftsman, Office of U. S. Surveyor-General for the State of Washington, in general charge of Engr. Dept.: 1899-1901 general practice, Spokane, Wash.; 1901 to date Great Northern Ry., as follows: 1901-1903 Office Engr. in office of District Engr., Spokane, Wash.; 1903-1913 District Engr., Spokane, in charge of all engineering work on three Operating Divisions; 1913-1914 District Engr., Seattle, Wash., in charge of all engineering work, Western District; 1914-1920 Prin. Asst. Engr., covering Western District; 1920 to date Asst. Chf. Engr., with headquarters at Seattle, in charge of all engineering work on Central and Western Districts.

Paul Goodwin Brown

(Candidate for Director)

Born October 24, 1871, at Red Oak, Iowa (Cornell Univ., 2 years.)—1894-1900 Rodman, Instrumentman, Asst. Engr., and Engr. in Chg. (Res. Engr.), Bureau of Engineering, Chicago, Ill., in responsible charge of North Shore Tunnel Extension, 68th St. Tunnel Extension, Section No. 3, North West Land Tunnel (originated method of timbering used in soft ground), Chicago Ave. Tunnel Extension, Kedzie Ave. Tunnel (aggregating 11 miles of tunnel construction in rock and earth); in charge of construction and maintenance of city intake cribs, its floating equipment, also, of pumping station maintenance and repairs; originated, designed, and constructed the apparatus (still in operation) for protection of intake cribs from ice; 1900-1901 Engr. and Supt., F. R. Dravo & Co., Pittsburgh, Pa., on intake tunnels for Carnegie Steel Co., Rankin, Pa., National Steel Co., Mingo Junction and Youngstown, Ohio, American Steel & Wire Co. at Neville Island, Pa.; coffer-dam stone intake pier and pumping station on Neville Island; rock tunnel for New Haven Water Co., Foxon, Conn.; large open caisson for Pitts. & Lake Erie R. R., at Pittsburgh, for foundation for power-house stack: 1900-1904 Cons. Engr. at various times for Corporation Counsel of City of Chicago on tunnel

cases; 1901-1904 Engr. and Supt., W. J. Gawne & Co., on concrete and brick-lined tunnel, Cincinnati, Ohio: 1903 Cons. Engr. for F. R. Dravo & Co. during construction of Olliver Subway Tunnel, Pittsburgh; 1904-1905 Supt. and Managing Engr., O'Rourke Engineering Construction Co. on Grand Central Terminal Improvement, New York, N. Y.; 1905-1906 Eng. Supt., Degnon Contracting Co., on New York & Long Island R. R. Tunnels from Grand Central Station to Long Island City; 1904-1908 Managing Engr., in charge of construction of the P. R. R. Cross-town Tunnels, New York, N. Y.: 1908-1912 Vice-Pres., Construction Co. in charge of Contract 40 of the New York State Barge Canal (2 000 000 yd. of heavy excavation, also, bridges, abutments, and retaining walls): 1908-1915 Executive Officer in charge for Contractors of complete sanitary system for Havana, Cuba, consisting of several hundred miles of sewers and drains; air tunnel through soft ground under harbor; rock tunnel under Cabanas Hill; outfall to sea; and pumping station; 1913-1914 Managing Engr., N. Y. Connecting Ry. on Ward's Island Foundation for Hell Gate Bridge: 1917-1919 Cons. Engr., Board of Water Supply, New York, N. Y., also, Transit Comm., New York, N. Y.: 1918 Superv. Eng., Fleet Corporation; 1919-1920 Contr. on 8 miles of concrete highway, Towanda, Pa.: has served on many committees to promote matters of interest to citizens of nation, State, and city, and also on committees of the Society, and of Engineering Council; at present, Officer and Director of several construction and mining companies, and Consultant to many interests.

Thaddeus Merriman

(Candidate for Director, District No. 1)

Born April 6, 1876, New Haven, Conn. (Lehigh Univ., C. E. 1897)—Sept.-Dec., 1897, Asst. Engr., New Britain, Conn, Water-Works, development of additional supply: Dec., 1897-July, 1899, Rodman, Transitman, Draftsman, and Computer, U. S. Nicaragua Canal Comm., on surveys and plans for the Nicaragua Canal: July, 1899-July, 1900, Chf. of Party, U. S. Isthmian Canal Comm., on surveys in Nicaragua: Oct., 1900-Mar., 1901, with New York Continental Jewell Filtration Co., on design of Little Falls, N. J., Filtration Plant: Mar., 1901-April, 1902, Insp. in the United States, Guayaquil & Quito Ry., of bridges, locomotives, and railway material for export to Ecuador: April, 1902-Aug., 1905, Asst. Engr. and Div. Engr., Jersey City Water Supply Co., on construction of Boonton, N. J., Dam, and on general hydraulic and construction work for the East Jersey, Passaic, and Acquackanonk Water Companies: Aug., 1905, to date Asst. Engr., Asst. to Chf Engr., Dept. Engr., Deputy Chf. Engr., and (since June, 1922), Chf. Engr., Board of Water Supply of the City of New York, on surveys, plans, designs, and construction of the Catskill Water Supply System.

Robert Farnham

(Candidate for Director, District No. 4)

Born December 19, 1877, Washington, D. C. (Lehigh Univ., C. E. 1899)—1899-1902 Asst. in Eng. Corps, D. C., design and construction of highways,

steel and masonry bridges: 1902-1903 Detailer, J. H. Gray & Co., New York, N. Y., on steel for buildings: 1903 to date with P. R. R., as follows: March to Aug., 1903, Transitman, Eng. Corps; Aug., 1903, to March, 1910, Asst. Engr. of Const. in charge of work at Washington, D. C., including bridges, buildings, tunnels, grade-crossing elimination, and track construction; 1910-1913 Asst. Engr., office of Engr. of Bridges and Buildings, in charge of drafting-room, designing steel and reinforced concrete bridges and buildings; 1913-1916, Asst. to Engr. of Bridges and Buildings; 1916-1923 Asst. Engr. of Bridges and Buildings, under direction of Engr. of Bridges and Buildings, in charge of design and erection of masonry and steel bridges on P. R. R. System east of Pittsburgh and Erie; April, 1923 to date Engr. of Bridges and Buildings, P. R. R. System, in charge of design and erection of bridges and buildings on System east of Pittsburgh and Erie.

Arthur Osbourne Ridgway

(Candidate for Director, District No. 11)

Born February 23, 1870, Lawrence, Kans. (Univ. of Kansas, B. S., 1892)—1892-1893 Draftsman, Denver & Rio Grande R. R.: 1893-1894, successively, Draftsman Designer, and Chf. Engr., Bellefontaine Bridge & Iron Co. (previously Buchanan Bridge Co.), Bellefontaine, Ohio: 1895-1903, Denver & Rio Grande R. R., as follows: 1895 Instrumentman; 1895-1898 Asst. Div. Engr.; 1898-1900 Acting Div. Engr.; 1900 Asst. Div. Engr.; 1900-1901 Acting Div. Engr.; 1901-1903 Asst. Div. Engr.; 1897-1902 in charge of design and construction of all steel bridges: 1903-1904 Locating Engr. in charge of construction, Rio Grande & Southwestern R. R.: 1904 Asst. Div. Engr., Denver & Rio Grande R. R.: 1904-1905 Gen. Supt. in charge of maintenance, operation, and construction, Silverton Ry. and Silverton Northern R. R.: 1905-1908 Office Engr., and Acting Engr., Bridges and Buildings, Denver & Rio Grande R. R.: 1909-1923 Asst. Chf. Engr., also, 1913-1923 Chairman, Valuation Committee, and 1918-1923 Safety Officer, Denver & Rio Grande R. R. and Associated Companies: 1923 Chf. Engr., Denver & Rio Grande Western R. R. System.

Alexander Maitland, Jr.

(Candidate for Director, District No. 14)

Born February 9, 1866, Richmond, Mo. (Univ. of Missouri, C. E., 1899)—1889 Draftsman, King Bridge Co., Cleveland, Ohio: 1889-1890, Keystone Bridge Co., Pittsburgh, Pa., estimating and designing: 1890-1891 Draftsman and Asst. Engr., Missouri Pacific R. R.: 1892 Asst. Professor, Civ. Eng., Univ. of Missouri: 1893-1899, Asst. Engr., Bridges and Bldg. Dept., Missouri Pacific R. R.: 1899-May, 1900, Res. Engr., Pittsburgh Bridge Co., Kansas City, Mo.: May, 1900-1904 Contr. Engr. and Contr. Mgr., Am. Bridge Co., Butte, Mont., and Kansas City, Mo.: 1905 to date Pres., Kansas City Bridge Co., Contr. Engrs. for steel and concrete bridges, substructures, and superstructures, specializing in railroad bridges; work done for the following: Mo. Pac. R. R., Wabash Ry., Frisco Ry., Kansas City Southern Ry., Rock Island Ry., Union

Pacific Ry., Cotton Belt, M. K. & T. Ry., Kansas City Terminal, St. Louis Terminal, Kansas City, Clay County & St. Joseph Elec. Ry., etc.; State highway work for Missouri, Kansas, Oklahoma, Texas, and Arkansas; revetment and river protection work for Wabash Ry., Mo. Pac. R. R., U. S. Corps of Engineers, and various Drainage Districts: 1918-1919 Mgr., Gulf District, U. S. Shipping Board, Emergency Fleet Corporation, work involved expenditure of $60 000 000 in construction of wooden ships: Member of firm of Fuller & Maitland, engaged on design and supervision of construction of new water plant for Kansas City, Mo., to cost $11 000 000.

Joseph Milton Howe

(Candidate for Director, District No. 15)

Born July 30, 1874, Houston, Tex. (B. S., Mass. Inst. Tech., 1896)—May, 1897-October, 1899, Rodman and Instrumentman, Gulf, Colorado & Santa Fé Ry.: November, 1899-December, 1902, Asst. Engr., and Acting Engr., Maintenance of Way, Houston & Texas Central Ry.: 1903 Office Engr. for Engr., Maintenance of Way, Southern Pacific Ry. (Atlantic System): 1904-1909 in private practice in Houston, Tex., engaged in location and construction of short-line railroads, including the F. C. Montana Panuco y Monclova, in Mexico; design and construction of Drainage District No. 1, Liberty County, Texas; storage tanks and pipe lines for various oil companies; and paving and sewers for land development companies: 1909 to date, Member of firm of Howe & Wise, in general engineering practice in Houston, during which time the firm has handled the engineering design and construction of sewers, water-works, and pavements for additions to the City of Houston; 1911-1915 acted as City Engrs. for City of Houston Heights; engaged on design and construction, Drainage District No. 8, Harris County, Texas; 1915-1921 Cons. Engrs., Gulf Coast Irrigation Co.; 1917-1919 Cons. Engrs., Liberty County, Texas, on road work; 1911-1914 and 1917 to date, County Engrs., Harris County, Texas; 1918-1921 location and construction, Dayton & Goose Creek Ry.; 1919 to date Cons. Engrs., Waller County, Texas, on bridge design and construction.

Activities of Local Sections*

Meeting of the Cincinnati Section

A meeting of the Cincinnati Section was held at the Engineers Club, Cincinnati, Ohio, on October 1, 1923; President J. A. McDonough in the chair; Edgar Dow Gilman, Secretary *pro tem.;* and present, also, 7 members.

The deaths of Benjamin Franklin Thomas, M. Am. Soc. C. E., and Fred Charles Smith, Assoc. M. Am. Soc. C. E., were announced.

A letter from the members of the Board of Direction of the Society to Director Ralph N. Begien, relative to the dinner tendered them on their trip to New Orleans, La., was read, and reference was also made to a letter from the Alfred Noble Memorial Committee.

The Secretary persented a letter from Secretary Dunlap of the Society requesting suggestions for subjects and speakers for the Annual Convention of 1925, which it has been tentatively decided to hold in Cincinnati. The subject was considered, and various suggestions as to subjects were made.

The questionnaire sent out by the Committee on Local Sections of the Society in regard to activities of Local Sections, was discussed and answered.

Meeting of the Colorado Section

A special meeting and dinner of the Colorado Section was held at the Cactus Club, Denver, Colo., on September 13, 1923, in honor of President Charles F. Loweth of the Society; John S. Means, President of the Section, in the chair; William B. Freeman, Secretary; and present, also, 87 members and guests.

A number of prominent engineers from other parts of the United States were present, including Leonard Metcalf, M. Am. Soc. C. E., of Boston, Mass., and J. Waldo Smith and J. Vipond Davies, Members, Am. Soc. C. E., of New York, N. Y., and also Mr. D. W. Brunton, of Denver. The dinner was followed by a short musical entertainment, after which brief addresses were made by President L. G. Carpenter of the Colorado Engineering Council, President Davies of United Engineering Society, and Mr. Metcalf.

President Loweth then addressed the meeting on various phases of the activities of the Society and the co-ordination of its work with that of the other Founders Societies. At the conclusion of his remarks, which were listened to with much attention and appreciation, Mr. Arthur Ridgway thanked President Loweth in behalf of the Colorado Section and the Colorado Engineering Council for his visit and address.

After the adjournment of the meeting, a short social gathering was held in order to give the members and guests an opportunity to meet President Loweth.

Meetings of Duluth Section

The Annual Meeting of the Duluth Section was held on May 21, 1923; President W. H. Hoyt in the chair; W. G. Zimmermann, Secretary; and present, also, 24 members.

* For list of Local Sections, Officers, Rules, etc., see 1923 Year Book, p. 15 and p. 605.

The minutes of the meeting of April 16, 1923, were read and approved.

A supplemental written report of the Committee, consisting of Messrs. Hutchinson, Fixen, and Stack, on the paper by W. J. Knight, M. Am. Soc. C. E., entitled "Is the American Society of Civil Engineers a Progressive Institution", was read by President Hoyt. On motion, duly seconded, the report was adopted, and the Secretary was instructed to send copies of it to Secretary Dunlap of the Society and to all Local Sections.

Correspondence from Messrs. George C. Newton and A. S. Hathaway relative to membership in the Section, was presented by the Secretary.

President Hoyt reported on the meeting of the Local Sections of the Seventh District, held at Milwaukee, Wis., at which he and Mr. W. A. Clark represented the Section. He stated that it was the consensus of opinion that the meeting was of great benefit in bringing the various Sections of the District in closer touch with one another, and that it had been decided to hold a similar meeting annually hereafter, probably in March of each year. On motion, duly seconded, President Hoyt's report was accepted, and the action taken at the meeting was ratified.

Announcement was made by the Secretary that the Section now had 42 members.

On motion, duly seconded, the Annual Report of the Treasurer was adopted, subject to the approval of the Auditing Committee. The report showed that all membership dues for the year had been paid.

On motion, duly seconded, the Secretary was instructed to prepare and distribute a new Year Book of the Section.

The following officers were elected for the ensuing year: President, T. F. McGilvray; First Vice-President, O. H. Dickerson; Second Vice-President, E. H. Dresser; Secretary, Walter G. Zimmermann; and Treasurer, John Carson. These officers, with Past-Presidents Pickles and Hoyt, will constitute the Board of Directors for 1923.

Meeting of June 18, 1923

A meeting of the Duluth Section was held on June 18, 1923; Vice-President E. H. Dresser in the chair; Walter G. Zimmermann, Secretary; and present, also, 20 members and 2 guests.

The absence of President McGilvray, it was explained, was due to his having been injured in an automobile accident earlier in the day.

The Secretary presented correspondence from Mr. A. S. Hathaway relative to membership in the Section, and from Secretary Dunlap acknowledging the receipt of the report on the Knight paper.

A letter from Robert Ridgway, M. Am. Soc. C. E., Secretary-Treasurer of the Alfred Noble Memorial Fund, in which he called attention to the Memorial Fund, was read by Mr. W. H. Hoyt, who also presented a letter from President H. R. Safford of the Illinois Section, in reference to the Annual Convention of the Society to be held in Chicago, Ill., on July 11, 12, and 13, 1923.

The members of the Committees on Entertainment, Publicity, Auditing, Library, and Papers, were announced as having been appointed by President McGilvray for the ensuing year.

A report on the proposed Contract Form for Railroad Work made by a Committee, consisting of Messrs. W. A. Clark and E. H. Dresser, was presented by Mr. Clark. On motion, duly seconded, the report was accepted, with the request that it be put in writing for transmission to Chairman J. S. Langthorn of the Special Committee on Standard Construction Contracts of the Society.

The meeting was addressed by Mr. J. I. Quinn who gave an interesting description of the St. Louis County Highway System and the overhead crossing construction work, illustrating his talk with maps and photographs.

A vote of thanks was extended Mr. Quinn at the conclusion of his address.

Meeting of July 16, 1923

A meeting of the Duluth Section was held on July 16, 1923; Vice-President E. H. Dresser in the chair, Walter G. Zimmermann, Secretary; and present, also, 19 members and 2 guests, Messrs. E. R. Brace of Nampa, Idaho, and H. W. Richardson, Secretary of the Duluth Engineers Club.

The minutes of the meeting of June 18, 1923, were read and approved.

Chairman Dresser introduced Mr. Brace who gave an interesting talk on personal experiences during his connection with the U. S. Weather Bureau at Washington, D. C., Detroit, Mich., and Duluth, and his more recent experiences in mine exploration and other work at Nampa, Idaho. Mr. Brace was followed by Mr. Richardson who addressed the meeting briefly.

Mr. F. E. House presented a detailed report of the Annual Convention of the Society held in Chicago, Ill., on July 11-13, 1923, giving an interesting résumé of the proceedings and program. This was followed by a supplemental report by Mr. W. H. Woodbury who had also attended the Convention.

Meeting of August 20, 1923

A regular meeting of the Duluth Section was held on August 20, 1923; President T. F. McGilvray in the chair; Walter G. Zimmermann, Secretary; and present also, 17 members and 2 guests.

After luncheon was served, and the guests had been introduced, the meeting was turned over to the Entertainment Committee which presented Frank Crassweller, Esq., of Duluth.

Mr. Crassweller gave an interesting talk on "Excess Condemnation as Related to City Planning", and the address was followed by discussion of the subject, with particular reference to the question of the removal of the Point of Rocks, a natural obstruction to the development of the business district westward in Duluth.

The Secretary presented a letter from Secretary Dunlap of the Society suggesting that each Local Section consider the question of Waste in the Building Industry, and President McGilvray announced that he had requested the Committee on Papers, consisting of Messrs. Darling, Lawrie, and Patton, to submit a report on the subject at the next meeting of the Section.

MEETING OF SEPTEMBER 17, 1923

A regular meeting of the Duluth Section was held on September 17, 1923; Vice-President O. H. Dickerson in the chair; Walter G. Zimmermann, Secretary; and present, also, 19 members and 2 guests.

The minutes of the meeting of August 20, 1923, were read and approved.

Mr. J. A. Lawrie, for the Committee to Report on Waste in the Building Industry, reported that progress was being made, and that a final report would be submitted at the next meeting.

Mr. E. W. Kelly presented an instructive paper on "Selecting Centrifugal Pumps for Various Purposes". After discussion of the points brought out by the speaker, on motion, duly seconded, the Committee on Papers was instructed to prepare copies of the paper for distribution among members of the Section and also for transmission to Secretary Dunlap. Copies of the New Year Book of the Section were also distributed.

Meeting of the Louisiana Section

A meeting of the Louisiana Section was held in New Orleans, La., on October 3, 1923; President E. H. Coleman in the chair; F. A. Muth, Secretary; and present, also, 11 members and guests.

The minutes of the previous meeting were read and approved.

Letters from Secretary Dunlap and the Questionnaire sent out by the Committee on Local Sections of the Society, as to activities of Local Sections, were presented. The questions were considered separately and answered.

On motion, duly seconded, the Section went on record as not being in favor of the establishment of a Benevolent Fund for the Society.

Meetings of the Rochester Section

A meeting of the Rochester Section was held at the University Club, Rochester, N. Y., on July 6, 1923; President Edwin A. Fisher in the chair; S. M. Brown, Secretary; and present, also, 16 members.

The minutes of the previous meeting were read and approved.

President Fisher read a letter from Robert Ridgway, M. Am. Soc. C. E., Secretary-Treasurer of the Alfred Noble Memorial Committee, calling attention to the Memorial Fund.

The motion was made, seconded, and carried, that it was the sense of the meeting that a Benevolent Fund of the Society was not desirable at this time.

On motion, duly seconded, President Fisher was appointed as the representative of the Section at the Annual Convention of the Society in Chicago, Ill., July 10 and 11, 1923.

A motion was made, seconded, and carried, that the Section request the allocation of the Cornell University Student Chapter for mutual co-operation.

On motion, duly seconded, the attitude of the New York Section toward the Employment Service was endorsed by the meeting, and it was voted that it is the sense of the meeting that the Section feels that this Service should be continued until the final report is made by the Joint Committee, as it is believed that an organization placing 200 men monthly is distinctly an asset.

The purpose of this meeting was to make known to the members an invitation extended jointly by the Rochester Engineering Society and the Section to the members of the Sanitary Engineering Division of the Society to stop over in Rochester on their way to the Annual Convention at Chicago, for a visit to the various municipal sanitation establishments and to plan for the entertainment of these visitors. A joint luncheon with the Rochester Engineering Society was arranged for July 9, 1923, at the Powers Hotel.

Joint Luncheon Meeting of the Rochester Engineering Society and the Rochester Section

A joint luncheon meeting of the Rochester Engineering Society and the Rochester Section was held at the Powers Hotel on July 9, 1923, to meet the visiting members of the Sanitary Engineering Division of the Society.

The meeting was called to order by Mr. Storey, who introduced President Fisher.

The letter from Robert Ridgway, M. Am. Soc. C. E., Secretary-Treasurer of the Alfred Noble Memorial Fund of the Society, was read by President Fisher, and a description of the Fund and its aims was presented for the benefit of the members of the Rochester Engineering Society.

The meeting was then turned over to J. F. Skinner, M. Am. Soc. C. E., who explained very ably why the members of the Sanitary Engineering Division had not taken advantage of the offer to use the "keys of the city" for an inspection of the municipal sanitation plants.

Meetings of the Utah Section

A meeting of the Utah Section was held at the University Club, Salt Lake City, Utah, on September 10, 1923; President Howard C. Means in the chair; H. S. Kleinschmidt, Secretary; and present, also, 18 members and guests.

The meeting was called for the purpose of meeting President Charles F. Loweth of the Society, and was preceded by an informal dinner.

President Loweth addressed the meeting on matters pertaining to the Society and to engineers in general.

Discussion was had as to how often meetings of the Section should be held, the suggestion having been made that, instead of bi-monthly meetings, as had been previously decided on, monthly meetings should be held. On motion, duly seconded, it was decided that the meetings of the Section should be held bi-monthly on the first Monday of each month and that the present meeting should be considered as a regular bi-monthly meeting. The Secretary was also instructed to send a letter to each Director of the Society calling attention to this fact and inviting them to visit Salt Lake City whenever it was possible. Notice of the change in meeting dates was also ordered to be sent to Secretary Dunlap of the Society for publication in *Proceedings*.

Entertainment During the Visit of President Loweth

President Loweth arrived in Salt Lake City, Utah, on September 9, 1923, accompanied by Mrs. Loweth. During the morning of that day, Mr. and Mrs. Loweth were taken on an automobile drive around the city by Mr. and Mrs.

H. S. Kleinschmidt, and were entertained in the afternoon by Mr. and Mrs. H. C. Means. President Loweth was the guest of Mr. R. K. Brown on Monday morning, September 10, 1923, following which he was the guest at the All Engineers Weekly Luncheon at the Commercial Club, at which he was the speaker, 50 engineers being present. During the afternoon of September 10, Mr. and Mrs. Loweth were taken for an automobile drive by Mr. R. R. Lyman, and on Tuesday morning, September 11, 1923, through the courtesy of Mr. W. R. Armstrong, they were taken on a trip to view the workings of the Utah Copper Company at Bingham Canyon.

Minutes of Meetings

OF THE SPECIAL COMMITTEES

Special Committee on Impact in Highway Bridges

(Abstract)

August 27, 1923.—The fourth meeting of the Special Committee on Impact in Highway Bridges was held at Ames, Iowa. Present, A. H. Fuller (*Chairman*), A. R. Eitzen, and F. E. Turneaure.

The meeting was largely of an informal nature, and was held to get in touch with the work, including the instruments and the calibration of instruments, which has been under way at Ames, Iowa, during the season as a co-operative project between the U. S. Bureau of Public Roads, the Iowa State Highway Commission, and the Engineering Experiment Station of Iowa State College.

Informal consideration was given to the membership of the Committee, and it was decided not to ask for any increase in membership at this time.

Relative to the suggestion, through Secretary Dunlap, that the work of the Committee be made a joint project with the Advisory Board on Highway Research of the Division of Engineering, National Research Council, which had been referred by Secretary Dunlap to Professor Talbot, Chairman of the Research Committee, the relations with National Research Council were discussed without recommendation.

It was the consensus of opinion that the report of the Committee to the Annual Meeting of the Society should be a Progress Report, without any attempt to include data or the discussion of data.

Relative to making the estimate for appropriation for Committee work for 1924, it was felt that it was desirable to talk over possible modifications in the photographic instrument of the U. S. Bureau of Public Roads with the engineers of the Bureau, and in accordance with this informal discussion, Chairman Fuller was authorized, on motion, duly seconded, to visit Washington and discuss the question of instruments with the officials of the Bureau of Public Roads and the Bureau of Standards, with reference to expediting the work of the Committee in developing the instruments for another season's work.

On motion, duly seconded, it was decided that another meeting of the Committee be called in Chicago, Ill., at an early date, and, if practicable, on the return trip of Chairman Fuller from Washington.

Special Committee on Hydraulics Phenomena

(Abstract)

September 13, 1923.—A meeting of the Special Committee on Hydraulics Phenomena was called to order at 9 A. M., at Lincoln Hall, Cornell University, Ithaca, N. Y. Present, S. M. Woodward (*Chairman*), R. E. Horton, E. W. Schoder, and M. L. Enger (*Secretary*).

After a general discussion, participated in by all the members present at the meeting, in regard to the field of activity of the Committee, it was agreed that no attempt should be made to carry out research work until definite carefully planned projects had been made and that, for the present, the Committee should concentrate its attention on the fundamentals of hydraulic science.

The meeting was adjourned for lunch which was followed by an inspection of the Cornell Hydraulic Laboratory.

The Committee reconvened with the same attendance as in the morning.

On motion, duly seconded and carried, the Chairman was requested to inquire of various hydraulic laboratories and interested engineers concerning experimental or analytical investigations in progress or which have been completed, but not published.

It was also agreed that the first report of the Committee should contain a statement stressing the need of care in hydraulic experiments if reliable conclusions are to be drawn from them and enumerating some of the features which have been often neglected.

The Committee reconvened at 7 P. M., at the Ithaca Hotel, with the same attendance as in the afternoon.

It was agreed that each member of the Committee should prepare a list of research topics in hydraulics to be forwarded to Mr. Horton to be combined and classified and sent to members of the Committee.

On motion, duly seconded, the general form of the letter to be sent to hydraulic laboratories and interested engineers was approved, and it was agreed that each member of the Committee should forward to the Chairman the names of those to whom he wishes copies of the letter sent.

It was decided, after discussion, that the Committee should undertake the preparation of an annotated bibliography of investigation in hydraulics. In order to facilitate the work, the field was divided as follows: Water Hammer to Mr. Horton; Measurement of Water and Unsteady Flow in Open Channels to Professor Woodward; Flow in Pipes and Channels to Professor Enger; and Curved and Expanding Channels to Professor Schoder.

On motion, duly seconded, the Chairman was instructed to arrange for a meeting of the Committee in New York, N. Y., on January 15, 1924, the day preceding the Annual Meeting.

It was voted to request an allotment of $1 000 for Committee work during 1924, and recommendations were made for filling the vacancy on the Committee.

Announcements

The Reading Room of the Society is open from 9 A. M. to 6 P. M., and from 7 P. M. to 10 P. M., every day, except Sundays, New Year's Day, Washington's Birthday, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, and Christmas Day; during July and August, it is closed at 5 P. M.

Future Meetings

November 7, 1923.—8:00 P. M.—A regular business meeting of the Society will be held and the Tentative Specifications for Steel Highway Bridge Superstructure: Submitted as a Progress Report of the Special Committee on Specifications for Bridge Design and Construction, will be presented for discussion. These Specifications were published in *Proceedings* for September, 1923.

December 5, 1923.—8:00 P. M.—A Joint Meeting with the American Society of Mechanical Engineers and the American Institute of Electrical Engineers, to discuss the subject of "Hydro-Electric Power", will be held in the Auditorium of the Engineering Societies Building, 33 West 39th Street, New York, N. Y.

Annual Meeting

The Seventy-First Annual Meeting will be held at the Headquarters of the Society, 33 West 39th Street, New York, N. Y., on Wednesday, Thursday, and Friday, January 16, 17, and 18, 1924, the following tentative program having been arranged:

Wednesday, January 16, 1924, 9:00 A. M.—Social Hour.

January 16, 1924, 10:00 A. M.—Annual Meeting, Conferring of Honorary Membership, and Presentation of Medals and Prizes for Papers.

January 16, 1924, 2:30 P. M.—Presentation and Discussion of Committee Reports.

January 16, 1924, 7:30 P. M.—President's and Honorary Members' Reception and Dinner Dance.

Thursday, January 17, 1924, 9:00 A. M.—Social Hour.

January 17, 1924, 10:00 A. M. to 4:30 P. M.—Conference of Representatives of Local Sections and Meetings of Technical Divisions.

January 17, 1924, 8:00 P. M.—Address and Smoker.

Friday, January 18, 1924.—All-Day Excursion.

List of Official Nominees for the Offices to be Filled at the Annual Election, January 16, 1924*

For President, to serve one year:

C. E. GRUNSKY, San Francisco, Calif.

For Vice-Presidents, to serve two years:

LINCOLN BUSH, New York City

OSCAR S. BOWEN, Seattle, Wash.

For Directors, to serve three years:

PAUL G. BROWN, New York, N. Y. ..... District No. 1
THADDEUS MERRIMAN, New York, N. Y. ..... District No. 1
ROBERT FARNHAM, Philadelphia, Pa. ..... District No. 4
ARTHUR O. RIDGWAY, Denver, Colo. ..... District No. 6
ALEXANDER MAITLAND, JR., Kansas City, Mo. ..... District No. 14
J. M. HOWE, Houston, Tex. ..... District No. 15

Searches in the Library

As the Library of the American Society of Civil Engineers has been merged in the Engineering Societies Library, requests for searches, copies, translations, etc., should be addressed to the Director, Engineering Societies Library, 29 West 39th Street, New York, N. Y., who will gladly give information concerning the charges for the various kinds of service. A more comprehensive statement in regard to this matter will be found on pages 35 and 36 of the Year Book for 1923.

New Local Sections of the American Society of Civil Engineers

The Constitution of the following Local Section has been approved by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 116 *et seq.*:

Syracuse Section (Constitution Approved by Board, April 16, 1923).

Louis Mitchell, President; Henry G. Throop, Secretary-Treasurer, 2117 South Geddes Street, Syracuse, N. Y.

New Student Chapters of the American Society of Civil Engineers

The following Student Chapters have been authorized by the Board of Direction since the list was prepared for the 1923 Year Book, pp. 21 *et seq.*:

College of the City of New York, Organized 1923.

Henry B. Clapp, Jr., President; Bruce C. Hayter, Secretary, College of the City of New York, New York, N. Y.

* For Biographical Sketches of Candidates, see p. 591.

University of Alabama, Organized 1923.

James T. Meador, University of Alabama, University, Ala.

University of Michigan, Organized 1923.

E. J. Giffels, President; William K. Saunders, Secretary, University of Michigan, Ann Arbor, Mich.

University of North Dakota, Organized 1923.

Ray V. Tilly, President; Richard B. Black, Secretary-Treasurer, 1002 Belmont Avenue, Grand Forks, N. Dak.

University of Tennessee, Organized 1923.

McLamore Roberts, President; James A. Thrasher, Secretary, Vendome Building, Knoxville, Tenn.

Membership

(From September 5 to October 2, 1923)

Additions

MEMBERS

	Date of Membership.
BEGGS, GEORGE ERLE. Associate Prof., Civ. Eng., Princeton Univ., Princeton, N. J.	Jun. Oct. 3, 1911 Assoc. M. Sept. 2, 1914 M. April 16, 1923
DORSEY, GUY PALMER. Deputy County Surv. and Highway Commr., Douglas County (Res., 1518 North 33d St.), Omaha, Nebr..	Sept. 10, 1923
EASTHAM, ROBERT FRANCIS. Senior Highway Engr., Bureau of Public Roads, U. S. Dept. of Agriculture (Res., 1341 Madison St., N. W.), Washington, D. C.	Sept. 10, 1923
FISCHER, ALBERT FRIEDERICH. Gen. Mgr., Whiteway-7-Highway Assoc., Box 358, Iowa City, Iowa	Sept. 10, 1923
FURBER, PIERCE POWERS. (Wiseman & Furber), 715 Masonic Temple, Danville, Va.	Sept. 10, 1923
GELINEAU, VICTOR. Director and Chf. Engr., New Jersey State Board of Commerce and Nav., 1 Exchange Pl., Jersey City, N. J.	Sept. 10, 1923
HEILBRON, EMILE HENRY. Valley Engr., San. Dist. of Chicago, Chillicothe, Ill.	Sept. 10, 1923
HENDRY, JAMES ROWLEY. 8167 La Salle Boulevard, Detroit, Mich.	Sept. 10, 1923
HOPPEN, ROBERT, JR. Chf. Engr., New York Dock Co., Brooklyn (Res., 26 Marion St., Nyack), N. Y.	Sept. 10, 1923
JORDAN, SAMUEL ARTHUR. Engr., M. of W., West. Lines, B. & O. R. R., Room 400, Central Union Station, Cincinnati, Ohio...	July 9, 1923
KENT, CHARLES NELSON. Mgr., R. F. Almirall, 12 East 46th St. (Res., 4 West 43d St.), New York, N. Y.	Sept. 10, 1923
STETSON, EDWARD EVERETT. Engr. of Constr., Chicago Union Station Co. (Res., 1754 Bryn Mawr Ave.), Chicago, Ill.	May 28, 1923
WHITE, THOMAS WILLIAM. Chf. Engr., Mammoth Oil Co. (Res., 140 West 58th St.), New York, N. Y.	Sept. 10, 1923
ZAHLEN, JOHN VALFRID. Structural and Hydr. Designer, Byllesby Eng. & Management Corporation, Care, Western States Gas & Elec. Co., Placerville, Calif.	Sept. 10, 1923

ASSOCIATE MEMBERS

ASHWORTH, RAYMOND CHAPMAN. Valuation Engr., Los Angeles Ry., 1007 Los Angeles Railway Bldg., Los Angeles, Calif....	Sept. 10, 1923
BHOLE, VASUDEV RAO. Panabai Bldg., Residency Bazars, Hyderabad Deccan, India	May 28, 1923
BRYDEN, EDWARD ALLEN, JR. Res. Engr., Pennsylvania State Highway Dept., 39 Central Ave., Wellsboro, Pa.	May 28, 1923
CALLANAN, JOSEPH BERNARD. Asst. Engr., Board of Water Supply (Res., 313 West 92d St.), New York, N. Y.	July 9, 1923
CUENOT, WILLENER ALPHONSE. Chf. Draftsman, Gustav Lindenthal, New York, N. Y. (Res., 821 Pershing Ave., Elizabeth, N. J.)	Sept. 10, 1923
DANNER, CARL FREDERICK. Engr. and Asst. to Pres., Continental Leather Co., 5701 Tacony St., Frankford, Philadelphia, Pa..	Sept. 10, 1923

ASSOCIATE MEMBERS—(*Continued*)

	Date of Membership
DAVIS, BERRIEN WALKER. Constr. Engr., North Carolina State Highway Comm., Tarboro, N. C.	May 28, 1923
DEERING, EARL WILLIAM. Asst. Div. Engr., Div. 5, Missouri State Highway Comm. (Res., 305 East Dunklin St.), Jefferson City, Mo.	Sept. 10, 1923
ECCLES, ALFRED HARVEY. Engr.-Insp., Eng. Div., Bureau of Bldgs., Borough of Queens, Long Island City (Res., 76 Hoyt Ave., Astoria), N. Y.	Sept. 10, 1923
FOSS, FREDERIC DEARBORN. Gen. Constr. Supt., James A. Mears, Inc., 342 Madison Ave., Room 1924 (Res., 2435 De Voe Terrace, Fordham), New York, N. Y.	Sept. 10, 1923
GREELY, JAMES CECIL. 811 Central Bldg., Seattle, Wash.	Sept. 10, 1923
HALEY, FREDERIC WILLIAM. Asst. Engr., F. A. Barbour, Boston (Res., 933½ Worcester Rd., Framingham Center), Mass.	Sept. 10, 1923
HANCOCK, EDWIN. 2047 Ogden Ave., Chicago, Ill.	Sept. 10, 1923
HAQUINIUS, ERIC. Photo-Topographic Engr., U. S. Geological Survey, Washington, D. C.	Sept. 10, 1923
HENDERSHOT, BERT LOSSING. Pacific Coast Representative for National Cast Iron Pipe Co., 429 A. G. Bartlett Bldg., Los Angeles, Calif.	Sept. 10, 1923
HILTON, JOSEPH KENNICOTT. County Engr., Wright County, Clarion, Iowa	May 28, 1923
KING, WARREN RAYMOND. Dist. Engr., U. S. Geological Survey, Water Resources Branch, 37 Municipal Bldg., Chattanooga, Tenn.	July 9, 1923
KIRBY, KYREL ELLSWORTH. Asst. Engr., G. C. & S. F. Ry., Chf. Engr.'s Office, Galveston, Tex.	Sept. 10, 1923
LANT, NORMAN EDWARD. State Bridge Engr., Louisiana Highway Comm., Baton Rouge, La.	Sept. 10, 1923
MCGINLEY, JOHN JOSEPH. Asst. Engr., Dept. of Plant and Structures, City of New York, Room 1800, Municipal Bldg. (Res., 62 Morton St.), New York, N. Y.	Sept. 10, 1923
MOORE, JAY DEWITT. 135 West 81st St., New York, N. Y.	Sept. 10, 1923
MUNSON, THURMOND ARMOUR. Associate Prof., Civ. Eng., Agri. and Mech. Coll. of Texas, College Station, Tex.	May 28, 1923
PATTERSON, REGINALD HEBER. Cons. Engr., Virginia Hot Springs Co., Hot Springs, Va.	Sept. 10, 1923
PEIRCE, WALTER ANDERSON. 227 Clifford Court, Madison, Wis.	Sept. 10, 1923
PITTS, NELSON FREDERICK, JR. Deputy City Engr., Syracuse, N. Y.	Sept. 10, 1923
RODEZNO, RAFAEL. Contr. (Keilhauer & Rodezno), 17 Battery Pl., New York, N. Y.	Sept. 10, 1923
SMITH, EDWARD KING. First Asst. City Engr., 823 Bushnell St., Beloit, Wis.	Jun. Nov. 4, 1914 Assoc. M. Sept. 10, 1923
STOKES, R. C. Engr., Robert J. Cummins, 727 Bankers Mortgage Bldg., Houston, Tex.	Sept. 10, 1923
STOLL, HAROLD DAVID. Dist. Engr., Dist. 12, Pennsylvania State Highway Dept., Scranton (Res., Dalton), Pa.	Sept. 10, 1923
STUMP, ELMER LEONARD. Res. Engr., California Highway Comm., Three Rivers, Calif.	Sept. 10, 1923

ASSOCIATE MEMBERS—(*Continued*)

	Date of Membership.
SULLIVAN, SYLVESTER CYPRIAN. Civ. Engr., Union Bag & Paper Corporation, Box 565, Glens Falls, N. Y.	Sept. 10, 1923
THOMAS, CARL FRANCIS. Asst. Engr., Spokane, Portland & Seattle Ry., 1686 Alameda Drive, Portland, Ore.	Sept. 10, 1923
VAWTER, ROBERT GWINN. Louisa, Ky.	Jun. Nov. 21, 1921 Assoc. M. Sept. 10, 1923
WEINSTEIN, JOSEPH. 405 Lexington Ave., New York, N. Y.	Sept. 10, 1923
WILLIS, WILLIAM PREY. Mech. Supt., Standard Oil Co. of New Jersey, Box 880, Charleston, S. C.	Sept. 10, 1923
WOLF, LOUIS. Asst. Engr., Valuation Dept., Mo. Pac. Ry., St. Louis (Res., 550 Big Bend Rd., Webster Groves), Mo.	Sept. 10, 1923
WOODCOCK, CHARLES FRANKLIN. Engr., Indiana Inspection Bureau (Res., 51 North Ritter Ave.), Indianapolis, Ind.	May 28, 1923
YAKE, WILLIAM DANIEL. Chf. Field Constr. Engr., City Eng. Dept., City Engr.'s Office, Spokane, Wash.	May 28, 1923
ZIGENBEIN, CLARENCE EARL. Chf. Engr., Austin Bros. Bridge Co., 3002 Peabody Ave., Dallas, Tex.	July 9, 1923

AFFILIATES

HORTON, GEORGE LAFLIN. Levee and Drainage Contr., 4144 Cole Ave., Dallas, Tex.	Sept. 10, 1923

JUNIORS

ALVAREZ-GUTIERREZ, MIGUEL. Box 1086, Bogota, Colombia.	May 28, 1923
BRADFIELD, JOHN ROSS. Plant Engr., Acme Cement Corporation, 60 Prospect Ave., Catskill, N. Y.	Sept. 10, 1923
BRYANT, CARLETON ELLIOTT, JR. Engr., Gen. Bldg., Materials Dept., Johns-Manville Co., Inc., Madison Ave. and 41st St., New York (Res., 426 South Columbus Ave., Mount Vernon), N. Y.	Sept. 10, 1923
COAKLEY, CLYDE EDWARDS. Eng. Dept., Standard Oil Co. of California, San Francisco, Calif.	Sept. 10, 1923
DOREMUS, HAL CHELLIS. Instr., Civ. Eng. Dept., A. & M. Coll. of Texas, College Station, Texas.	Sept. 10, 1923
DURHAM, HARRY EUGENE. Transitman, Kansas City South. Ry., Crestline, Kans.	Sept. 10, 1923
ELKAN, STANLEY ABE. Care, Chf. Engr., Cent. of Ga. Ry., Savannah, Ga.	Sept. 10, 1923
HARTLEY, GEORGE RUSSELL. Asst. Office Engr. and Res. Field Engr., Salmond, Scrimshaw & Co., Arlington (Res., 282 Centre St., Nutley), N. J.	May 28, 1923
KADOW, ROBERT JOHN. 151 West 51st St., Los Angeles, Calif.	May 28, 1923
MARCUS, BERNARD. 1067 Fox St., New York, N. Y.	Mar. 12, 1923
MATTHEWS, MEDWIN. Engr., Hungerford & Terry, Inc., Box 350, Clayton, N. J.	Sept. 10, 1923
POLLARD, ALBERT HARRISON. 209 South State St., Ann Arbor, Mich.	Sept. 10, 1923
RAMMO, WOLFERT. Draftsman, White Constr. Co., 95 Madison Ave., New York (Res., 360 Fifth Ave., Astoria), N. Y.	Mar. 12, 1923
RATHJENS, WILHELM FRITZ. 9 West Ohio St., Chicago, Ill.	Sept. 10, 1923

JUNIORS—(*Continued*)

		Date of Membership.
RAUH, CHARLES EDWARD, JR.	207 Central Ave., West Hoboken, N. J.	Sept. 10, 1923
SCHEUERMANN, ARTHUR.	Eng. Dept., Roxana Petroleum Corporation, 1016 Mayo Bldg., Tulsa, Okla	Sept. 10, 1923
VAN SICKEL, EDWARD LEE.	66 Ninth St., Wellsburg, W. Va	Sept. 10, 1923
ZIBILICH, ANTHONY MICHAEL.	Asst. Supt., U. S. Lighthouse Service, 520 Spain St., New Orleans, La	Sept. 10, 1923

Deaths

ARNOLL, KINGSLEY PARKHURST. Elected Associate Member, April 16, 1918; died September 1, 1923.

BARTHOLOMEES, CHARLES FELIX. Elected Associate Member, May 28, 1912; died September 12, 1923.

CUMMINGS, LEROY WEBSTER. Elected Member, June 1, 1920; date of death unknown.

FULLER, WILLIAM BARNARD. Eleeted Junior, June 3, 1885; Member, May 1, 1895; died June 17, 1923.

SPALDING, FREDERICK PUTNAM. Elected Member, December 2, 1891; died September 4, 1923.

Total Membership of the Society, October 2, 1923

Members	**4 793**	
Associate Members	**5 394**	
Corporate Members		**10 187**
Honorary Members		**11**
Juniors		**575**
Affiliates		**169**
Fellows		**9**
Total		**10 951**

The Co-Operative Employment Service of the Engineering Societies

An Engineering Societies Service Bureau was established in December, 1918, as an activity of Engineering Council. It was managed by a Board made up of the Secretaries of the four Founder Societies, and funds for its maintenance were provided by these Societies. On January 1, 1921, this Bureau was taken over by The Federated American Engineering Societies and was known as the Employment Service of that organization. Later, the management was taken back by the Founder Societies.

The improvement and extension of the Employment Service so that individual attention may be rendered to every member registered requires an increase in the available funds which can be secured only by making the Service partly self-supporting. A Joint Committee, representative of the four Founder Societies, after painstaking study presented a report on which has been based a co-operative plan that has been approved by the Governing Boards of the Founder Societies. Therefore, beginning September 1, 1923, the following rules will govern the operations of the Co-Operative Employment Service:

1.—Service to men seeking positions is limited to members of the four Founder Societies.

2.—Service is extended to all employers of engineers without charge.

3.—Listing of positions available is entirely discontinued in the publications of the respective Societies. There is substituted, however, for such publication a weekly *Employment Service Bulletin* which is available to members of the four Societies only, at a subscription of $3 quarterly, or $10 per annum.

4.—Publication of "Men Available" is continued by the respective Societies for all of their members and without charge.

5.—Members securing positions through the Employment Service are expected to co-operate with the Societies in financing the Employment Service by the payment within 30 days after placement of a nominal fee on the following basis: $10 for all positions paying a salary of $2 000 or less per annum; $10 plus 1% of all salary in excess of $2 000 per annum; temporary positions (one month or less) 3% of total salary received.

The fees received from members together with the financial support which the Founder Societies will continue to give, will make it possible to improve and expand the Service. However, a reasonable length of time and the whole-hearted support of all utilizing the Service will be required to secure the desired results.

Members of the American Society of Civil Engineers who desire to register should apply for further information, registration forms, etc., to Walter V. Brown, Manager, Engineering Societies Building, 29 West 39th Street, New York, N. Y. In order to be included in the list published in *Proceedings*, copy must be received on or before the first of each month. All communica-

tions should be addressed to Mr. Brown, giving name, address, and membership in this Society.

MEN AVAILABLE

ENGINEER with business and general auditing experience and four years' foreign experience (Belgian Congo, France, Germany); University Graduate 1915, who is used to taking responsible charge of things; married. Speaks French and German fluently and has practical knowledge of Spanish. Desires responsible position in United States or a foreign country. CE–496.

MEMBER, AM. SOC. C. E.; age 43; broad experience in design and construction, desires correspondence with consulting engineers and construction companies who will be interested in getting a high-class man as General Superintendent. Any good location will be considered. Salary or terms of engagement to be determined. CE–497.

TRAINED EXECUTIVE, Assoc. M. Am. Soc. C. E.; University graduate, C. E. degree; desires change. For past eight years has been applying his abilities to the problems of a variety of businesses, both as Research Man and Managing Executive. Was engaged for five years with one of the leading consulting management experts. CE–498.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; technical graduate; age 29; unmarried. Nine years' varied experience on engineering and construction work; desires position of responsibility, at reasonable salary, with future opportunity as ability is demonstrated. Can furnish best of references and solicits interview. CE–499.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; Norwich University graduate. Seven years' experience in highway location, design, and construction. Two years' fire protection, and some building and munipical, experience. Go anywhere. Available in two months. CE–500.

CIVIL ENGINEER, Assoc. M. Am. Soc. C. E.; university graduate; age 33; married. Ten years' experience in investigations, design, and construction of highways, irrigation and drainage systems in the Southwest; also mill and power-house construction. Desires engagement with consulting engineer in irrigation and drainage work, or with an irrigation or drainage district as engineer on either construction or operation. Location in Southern Rocky Mountains States desired. CE–501.

Additions to Engineering Societies Library*

(From September 1 to September 30, 1923)

The statements made in these notices are taken from the books themselves, and this Society is not responsible for them.

INTRODUCTION TO LIBRARY CLASSIFICATION.

W. C. B. Sayers. Second Edition. N. Y., 1922. (Purchase.)

TRAINING FOR LIBRARY SERVICE.

Charles C. Williamson. Carnegie Corporation of N. Y., 1923. (Gift.)

REPORT ON THE STATISTICAL WORK OF THE U. S. GOVERNMENT.

U. S. Bureau of Efficiency. Wash., 1923. (Purchase.)

TRADE ASSOCIATION ACTIVITIES.

U. S. Dept. of Commerce. (Purchase.)

WÖRTERBUCH DER HANDELSPRACHE; Vol. 1: DEUTSCH-ENGLISCH.

F. W. U. Wilhelm Eitzen. Leipzig, 1923. (Purchase.)

CATALOGUE OF SCIENTIFIC PAPERS,

4th Series, 1884-1900; Vol. 18; Q-S. Royal Soc. of London. (Purchase.)

ELEMENTS OF THE THEORY OF INFINITE PROCESSES.

By Lloyd L. Smail. N. Y., McGraw-Hill Book Co., 1923. 339 pp., 8 x 5 in., cloth. $3.50.

Under the title of Infinite Processes, the author has included the subjects of infinite sequences, infinite series, infinite products, infinite continued fractions, infinite determinants, and infinite integrals. His work is an introductory textbook, requiring only a knowledge of calculus, intended to give the more important conceptions and propositions of its field in sufficient detail to be intelligible to the beginner, and to serve as an introduction to the study of the special fields. According to the author, no suitable introductory textbook has hitherto been available.

TREATISE ON THE LAW OF SURVEYING AND BOUNDARIES.

By Frank Emerson Clark. Indianapolis, Bobbs-Merrill Co., 1923. 631 pp., diagrams, 8 x 5 in., fabrikoid. $5.00.

This book sets forth the laws pertaining to surveying and boundaries and discusses the problems that arise in locating boundaries and settling boundary disputes. It furnishes surveyors and attorneys a ready reference to the Acts of Congress providing for a survey of the public lands, the Instructions of the Surveyor-General to his deputies for executing public surveys, the suggestions to private surveyors on the subdivision of sections and the restoration of lost corners issued from time to time by the General Land Office, and the decisions of the Courts on various subjects, such as meander lines, marking lines and corners, restoration of lost corners, boundaries on waters, and the meaning of words used in descriptions. The author writes from an experience as a surveyor and as an attorney. His book is the first on its subject.

DICTIONARY OF APPLIED PHYSICS;

Vol. 5: Aeronautics; Metallurgy; General Index. By Sir Richard Glazebrook. Lond., Macmillan & Co., 1923. 592 pp., illus., diagrams, tab., 9 x 6 in., cloth. 63s. (Gift of Macmillan & Co., N. Y.)

The concluding volume of this valuable work of reference is dividend in two parts, treating of Aeronautics and Metallurgy, respectively. Part 1 contains long articles on Full Scale Aerodynamical Research, by R. M. K. Wood; Experimental Tests of Strength of Aeroplane Structures, by W. D. Douglas; Theory of Aeroplane Structures, by W. L. Cowley; Doping and Fabrics, by Guy Barr; Performance and Stability of Aircraft, by Leonard Barstow; Airscrews and Helicopters, by Arthur Fage; Experiments on Airships, by J. R. Pannell and R. Jones; Diffusion through Membranes, by Guy Barr; Engines, by G. H. Norman; Model Experiments, by E. F. Relf and H. B. Irving; and Hydrodynamical Theory, by Hermann Glauert. Among the longer articles is Part 2 are: Typical Alloy Systems, the Equilibrium Diagram and the Relationship of Structure and Physical Constants, by J. L. Haughton; Special Alloys and Aluminium Alloys, by Walter Rosenhain; Aluminium, by Donald Finlayson; Electric Furnaces, by F. A. J. FitzGerald; Laboratory Furnaces, and

*Unless otherwise specified, the reviewed books in this list have been donated by the publishers.

Refractories, by E. A. Coad-Pryor; Invar and Elinvar, by C. E. Guillaume; Iron-Carbon Alloys, and Defects and Failures of Metals, by D. Hanson; Relations of Strain and Structure, Thermal Study and Thermal and Mechanical Treatment, by Walter Rosenhain; Aggregation and Flow of Solids, by W. D. Haigh; and Special Steels, by W. H. Hatfield. An index to the volume and a general index to the whole work are included.

PHYSICS IN INDUSTRY; Vol. 1.

By Archibald Barr, Sir James A. Ewing, and Clifford C. Paterson. (Oxford Technical Publications.) Lond., Henry Frowde, and Hodder & Stoughton, 1923. 59 pp., 10 x 6 in., boards. 85 cents. (Gift of Oxford University Press. American Branch.)

The British Institute of Physics has established a series of lectures on the part played by physics in various industries. These lectures are intended to inform those interested in the application of science to the industries and to guide and help students of physics who intend to devote themselves to industrial research. The three lectures here presented, the first of the series, were delivered during 1922. Dr. Barr pays especial attention to the applications of Physical Research in Mechanical Engineering; Sir James Alfred Ewing speaks on the "Physicist in Engineering Practice"; and Mr. Paterson on the "Physicist in Electrical Engineering".

MIRRORS, PRISMS AND LENSES.

By James P. C. Southall. N. Y., Macmillan Co., 1923. 657 pp., illus, diagrams, 8 x 5 in., cloth. $4.50.

In spite of the existence of a number of excellent works on geometrical optics, there is, the author says, need for a textbook that will serve as an introduction to the theory of modern optical instruments; and this book, the outgrowth of a course of lecures at Columbia University, is offered for that purpose. In order to meet the limitations of beginners, only the simplest mathematical processes have been used and the earlier, more elementary parts of the subject have been treated with much detail. The new edition has been carefully corrected and a new chapter added.

REPRODUCTION OF SOUND.

Henry Seymour. N. Y., 1923. (Purchase.)

TABELLEN UND DIAGRAMME FUR WASSERDAMPF.

By Oscar Knoblauch, E. Raisch und H. Hausen. München und Berlin, R. Oldenbourg, 1923. 32 pp., diagrams, tab., 11 x 8 in., paper. 50 cents.

This pamphlet presents the results of the measurements of the specific heat of steam made during the past twenty years at the Laboratory of Technical Physics in Munich. The importance of these results consists not only in the new data on the characteristic changes in the specific heat of steam with the pressure and temperature, but also in the possibility of deriving the other properties of steam numerically by calculation from the specific heat and some factors, and thus preparing steam tables by a new and more convenient method. The principal tables give the usual thermodynamic constants of steam, one for temperatures from 5° to 275° cent., at 5° intervals, the other for pressures from 0.02 to 60 kg. per sq. cm. Other useful tables and charts are included.

TREATISE ON CHEMISTRY;

Vol. 2: The Metals. Sixth Edition. By H. E. Roscoe and C. Schorlemmer. Lond., Macmillan & Co., 1923. 1565 pp., illus., diagrams, 9 x 6 in., cloth. $15.00. (Gift of Macmillan & Co., N. Y.)

The sixth edition of this well-known work has been thoroughly revised by a group of writers under the editorship of B. Mouat Jones. Much new knowledge of the chemistry of the metals and their compounds has been obtained during the ten years that have elasped since the Fifth Edition of this treatise appeared, and an endeavor has been made to incorporate the most important part of this new material, while bringing the remainder of the volume up to date. The general character of the work, as a systematic account of the metals and their compounds, has been retained.

ULTRA-VIOLET RADIATION.

By M. Luckiesh. N. Y., D. Van Nostrand Co., 1922. 258 pp, illus., tab., 9 x 6 in., cloth. $3.50.

In this book, Mr. Luckiesh presents authentic data of such scope as to be useful to chemists, physicists, engineers, and others interested in ultra-violet radiation, its properties, production, and radiation. The book is a useful summary of the facts that have been ascertained by experiment and is provided with many bibliographical references.

DETERMINATION OF HYDROGEN IONS.

W. M. Clark. Balt., 1920. (Gift.)

ATOMIC STRUCTURE AND SPECTRAL LINES.

By Henry L. Brose. N. Y., E. P. Dutton & Co., 1923. 626 pp., diagrams, 9 x 6 in., cloth. $12.00.

The object of this book is to give a comprehensive account of the new physics of the atom and the meaning of spectral lines, without presenting too great difficulties for the non-academic reader. The present translation is from the thoroughly revised third German edition and embodies the most important recent developments in spectroscopy and atomic physics. An endeavor has been made to render the account vivid and easily intelligible.

MODERN GAS PRODUCERS.

By N. E. Rambush. Lond., Benn Bros., 1923. 545 pp., illus., diagrams, tab., 10 x 7 in., cloth. 55s.

This book contains an important treatise on its subject. The special problems that arise in the manufacture of producer gas and the design of producer-gas plants are treated in full detail, and the specific features of each design that has been built and operated have been set forth. The book is fully illustrated with drawings and photographs. Contents: General Remarks. Pt. 1: Theory; Principles Underlying the Formation of Producer Gas; Important Factors in Gas Producer Practice. Pt. 2: Plant; Gas Producer Types; Gas Cleaning and Cooling Plant Types; Gas Flow Plant and Apparatus. Pt. 3: Working Producer Gas Plants; Control Testing and Analysis; Operating Principles and Working Costs. Pt. 4: Outline of Producer Gas Utilization; Typical Applications; Comparison of Utilization Efficiency of Various Gases; Conversion Tables; Index.

DIE LÖSUNGSMITTEL DER FETTE, ÖLE, WACHSE UND HARZE.

H. Wolff-Berlin. Stuttgart, 1922. (Gift.)

METALLOGRAPHIE;

Bd. 2, Teil 2, Heft 6: Die Elektrische und Wärmeleitfähigkeit, von A. Schulze. W. Guertler. (Purchase.)

METALS AND METALLIC COMPOUNDS; Vol. 3-4.

By Ulick R. Evans. N. Y., Longmans, Green & Co., 1923. 2 v., illus., 9 x 6 in., cloth. Vol. 3, $4.75; Vol. 4, $6.00.

In this book the author has taken advantage of modern research in metallography, crystallography, electro-chemistry, etc., and has approached the subject of metals in a new spirit. He avoids catalogs of compounds and empirical accounts of metallurgical processes, and attempts to correlate cause and effect, and to introduce such theoretical views as will serve to connect the known facts in an ordered sequence, in readable form. These volumes (3 and 4) treat of the more important industrial metals, iron, nickel, platinum, copper, silver, gold, zinc, mercury, tin, lead, etc. The pure chemistry of each metal and its compounds is first discussed; then its terrestrial occurrence; and, finally, its technical preparation for use. Numerous references to the literature are given.

OIL AND PETROLEUM MANUAL FOR 1923.

Lond., 1923. (Purchase.)

PRODUCTION OF LIQUID FUELS FROM OIL SHALE AND COAL IN AUSTRALIA.

R. E. Thwaites. (Inst. of Science and Industry, *Bulletin No. 24.*) (Gift.)

IRON ORES OF LAKE SUPERIOR.

Crowell and Murray. Fifth Edition. 1923. (Gift.)

IRON ORE DEPOSITS OF CHINA.

F. R. Tegengren. 2 v. and atlas. (Purchase.)

COAL RESOURCES OF THE PAN-PACIFIC REGION.

Bertrand L. Johnson. 1923. (Gift.)

DIE QUANTITATIVE ORGANISCHE MIKROANALYSE.

Fritz Prezl. Berlin, 1917. (Gift.)

"HÜTTE", DES INGENIEURS TASCHENBUCH;

Vol. 2, Edition 2. By Akademischen Verein Hütte, e. v. in Berlin. Berlin, Wilhelm Ernst & Son, 1923. 1288 pp., illus., tab., 7 x 5 in., cloth. $2.00.

The second volume of this new edition covers the important subjects of Prime Movers, Measurements, Machinery, Shipbuilding, and Marine Engines, Automobile Construction, Lighting, and Electrical Engineering. It has been partly rewritten and partly revised, more than 200 pages having been added. The principal additions have to do with Boilers, Engines, Steam Turbines, Internal Combustion Engines, Hoisting Machinery, and Electricity. Each section is the work of a group of specialists.

KATALOG DER BIBLIOTHEK DES REICHSPATENTAMTS,

Stand vom 1 Oktober, 1922. Germany-Patent Office. 3 v. Berlin. (Purchase.)

PRACTICAL APPLICATIONS OF X-RAYS.

By G. W. C. Kaye. N. Y., E. P. Dutton & Co., 1923. 135 pp., illus., diagrams, tab., 9 x 6 in., cloth. $5.00.

In this book, the author, who is head of the Radiology Department of the National Physical Laboratory, confines himself to the practical uses of X-rays in science and industry. A brief introductory chapter on the nature and generation of X-rays is followed by chapters on X-ray bulbs, high potential generators, and methods for the measurement of X-rays. Chapter V, discusses the medical applications of X-rays in diagnosis and the treatment of disease. Chapter VI, calls attention to industrial applications, such as the examination of metals for flaws, of explosives and ammunition, of timber, aircraft, welds, rubber and glass, the investigation of old paintings, etc.

LES MÉTHODES MODERNES D'ORGANISATION INDUSTRIELLE.

By L. Benoist. Paris, Gauthier-Villars et Cie., 1923. 208 pp., tab., 9 x 6 in., paper. 18 fr.

As an introduction to management intended for young engineers, the book opens with a general survey of modern life, its activities and objects. This is followed by an account of modern methods of organization in the office and the shop. The final section deals with shop practice and includes many tables showing the time required for tool and hand operations in turning, fitting, assembling, etc.

MECHANICS OF MACHINERY; MECHANISM.

By Robert C. H. Heck. N. Y., & Lond., McGraw-Hill Book Co., 1923. 508 pp., diagrams, 9 x 6 in., cloth. $5.00.

The purpose of this work on the mechanics of machines is to cover the whole field of motions and forces in machines, in a manner suitable for study and teaching and as a related and consistent whole instead of as scattered, isolated branches. The present volume treats chiefly of mechanism. The material presented is arranged according to the problems in mechanism or mechanics which it presents, rather than according to kinds of machines. The ground is covered with sufficient completeness to make the book a useful reference treatise as well as a textbook. Contents: Elements and Principles of Machines; Machinery for Uniform Motion; Intermittent Motion; Gear Trains for Speed Variation; Cyclic and Differential Trains; Linkage Mechanisms and Movements; Form, Action and Production of Gear Teeth; Gear Teeth in Space; Index.

COLLECTIVE INDEX TO TRANSACTIONS OF THE AMERICAN CERAMIC SOCIETY.

Vols. 1–19, 1899–1917. Easton, Pa. (Purchase.)

TECHNISCHE MESSUNGEN BEI MASCHINENUNTERSUCHUNGEN, ETC.

A. Gramberg. Fifth Edition. Berlin, 1923. (Purchase.)

SPECIFICATION AND CONDITIONS OF CONTRACT

For Arapuni Electric-Power Supply: Section 1: Headworks. Revised, April, 1923. New Zealand-Public Works Dept. (Gift.)

VERSUCHE MIT ZAHNRÄDERN VON STRASSENBAHNWAGEN, ETC., 1923.

Hermann Cranz und Otto Kammerer. (Technische Hochschule zu Berlin. Versuchsfeld für Maschinenelemente, No. 3–4.) (Purchase.)

TRADE STANDARDS IN THE PUMP INDUSTRY.

New York Hydraulic Society. Second Edition. (Gift.)

STANDARD PIPING CODE, 1922.

Power Piping Society. Pittsburgh, Pa. (Gift.)

WOOD PATTERN-MAKING.

By Herbert J. McCaslin. N. Y., McGraw-Hill Book Co., 1923. 296 pp., illus., 8 x 5 in., cloth. $2.25.

For the student who desires to follow the occupation of pattern-making or to familiarize himself with the principles of that art, this book gives a clear account of the principles of moulding and of pattern construction in the shape of a series of problems arranged in a progressive course. Very definite instructions as to the order of operations are given for each exercise.

FOUNDRY WORK.

By R. E. Wendt. N. Y., McGraw-Hill Book Co., 1923. 206 pp., illus., tab., 8 x 5 in., cloth. $2.00.

This work is intended as a textbook covering the general principles of foundry work, instruction in moulding and core-making, and in mixing and melting metals. It is intended for use in colleges and by apprentices. The author is head Instructor in Foundry Practice in Purdue University, and the book is based on his experience in teaching the subject there.

COST CONTROL FOR FOUNDRIES.

By Frank Everitt and Johnson Heywood. N. Y., McGraw-Hill Book Co., 1923. 226 pp., illus., 9 x 6 in., cloth. $3.00.

A detailed description of the theory, practice, and routine of cost accounting for foundries, presented in a manner which can be easily understood by foundrymen with no claim to accounting knowledge, is contained in this book. The method described is planned to be simple and inexpensive, yet accurate. It is fully set forth, and a complete set of the necessary forms is given. The method is applicable to foundries of various kinds and sizes.

ENGINEERING KINEMATICS.

By William G. Smith. N. Y., McGraw-Hill Book Co., 1923. 282 pp., illus., diagrams, tab., 9 x 6 in., cloth. $3.00.

In this textbook, the author, although giving first consideration to the fundamental principles of motion, its laws, its conversion, and its transfer, has also given attention to the application of these principles to the design of agencies for transmission, transportation, and production. He thus endeavors to relate the study to actual engineering problems and conditions, so that the student's interest may be awakened by a knowledge of the practical applications of the science.

DIE DAMPFTURBINEN; Vol. 2.

By Const. Zietemann. Berlin u. Leipzig, Walter de Gruyter & Co., 1923. 141 pp., illus., 6 x 4 in., boards. 25 cents.

This, the second volume of this handbook, discusses in its first section the thermal calculations, the selection of the size or number of stages, and the determination of the blade velocity. Two worked-out examples, are given, showing how the methods are used. Sections 2 and 3 deal with the design and construction of the moving and the stationary parts of turbines. The treatment is extremely concise, but thoroughly practical.

ELEMENTS OF RADIO COMMUNICATION.

By Ellery W. Stone. Second Edition. N. Y., D. Van Nostrand Co., 1923. 318 pp., illus., diagrams, 8 x 5 in., cloth. $2.50.

Prepared originally for radio students in the Communication Service of the Navy, this book has proved suitable for use in other schools and for self-instruction. The subject is presented physically, rather than mathematically, in a manner requiring little previous knowledge on the part of the reader. This edition has been thoroughly revised and enlarged by the addition of recent developments.

RADIO PHONE RECEIVING.

By Erich Hausmann and others. N. Y., D. Van Nostrand Co., 1922. 183 pp., illus., diagrams, 8 x 5 in., cloth. $1.50.

This book, by a group of experienced engineers, is intended for the general reader who wishes an authoritative, simple account of the methods and apparatus used for the reception of radio phone speech and music. The book will be useful to novices and amateurs, as it avoids complicated descriptions and mathematics. Numerous practical hints and answers to questions that often arise are given.

ELECTRICAL VIBRATION INSTRUMENTS.

By A. E. Kennelly. (Engineering Science Series.) N. Y., Macmillan Co, 1923. 450 pp., illus., diagrams, tab. 9 x 6 in., cloth. $6.50.

Dr. Kennelly's book presents, from an electrical engineering viewpoint, the characteristics of telephone receivers (and of other vibrational instruments) as reciprocating electric motors. It is based on researches carried on at the Massachusetts Institute of Technology and at Harvard University during the past fourteen years. The book is intended as a textbook for students of telephone engineering, and also as a reference book on the receiver for telephone engineers.

LE MARTEAU, LE CHOC, LE MARTEAU PNEUMATIQUE.

Ch. Frémont. Paris, 1923. (Purchase.)

DISENO DE MINAS.

(Old Drawings of German Mines in the Vicinity of Freiberg and the Hartz.) (Purchase.)

INTRODUCTION TO MINING SCIENCE.

By John B. Coppock and G. A. Lodge. Second Edition. (Technical Handicraft Series.) Lond., and N. Y., Longmans, Green & Co., 1923. 252 pp., illus., 7 x 5 in., limp cloth. $1.35.

This introduction to mining science presents those topics of chemistry and physics which interest the miner. These are presented in the simplest language possible, with experiments requiring simple apparatus, while attention is called in each case to examples of the action of the scientific principles, drawn from the daily experience of the pupil. The text is adapted for use as a reference book and as a textbook.

MINE EXAMINATION QUESTIONS AND ANSWERS.

By James T. Beard. N. Y., McGraw-Hill Book Co., 1923. 3 v., illus., 8 x 5 in., cloth. $7.50.

This work contains more than 2 000 questions asked in American and Canadian State examinations of candidates for positions in mines, accompanied by correct answers to each question. Taken together, these answers form a course in elementary science as applied to mining and in the elements of mining. The answers are full, yet simple, and are classified by subject. They cover the knowledge needed by inspectors, foremen, fire-bosses, hoisting engineers, etc.

MINERAL VALUATION.

By Henry Louis. Lond., Charles Griffin & Co.; Phila., J. B. Lippincott Co., 1923. 281 pp., 9 x 6 in., cloth. 15 s. (Gift of J. B. Lippincott Co.)

The object of the present work is to lay before mining engineers and others interested the views of its author on the principles underlying mineral valuation, in the form into which they have crystallized during the course of many years of experience in the practice of this branch of the Mining Profession. The author is concerned to bring out in the first instance the cardinal fact that all mineral valuations must be based on an estimate of probabilities, never of certainties, and he has developed this theme to show how the mathematical conceptions of probability can be applied to mining valuations, so as to give a more definite meaning to them. The actuarial formulas are presented in a form for logarithmic computation. They are sufficient, Dr. Louis believes, to answer all purposes. He also discusses at length the collection of the data necessary for the calculations.

CARÉNES; DE FORMES NUISIBLES, OU FAVORABLES A LEURS GRANDES VITESSES;

Et Résistances de l'Eau a leur Translation. By F. E. Fournier. Paris, Gauthier-Villars et Cie., 1923. 27 pp., 9 x 6 in., paper. 3 fr. (50 cents).

This pamphlet is a mathematical analysis of the effect of the shape of ship hulls on their speed and on the resistance of the water to their movement. The author develops a method for dividing hulls of all tonnages into two categories, according to whether their forms are favorable or unfavorable to high speed.

DELAWARE RIVER BRIDGE JOINT COMMISSION

Of the Commonwealth of Pennsylvania and the State of New Jersey. Contract Nos. 4-6, with Contract Drawings. 1922. (Gift.)

EISERNE BRÜCKEN.

G. Schaper. Fifth Edition. Berlin [1922]. (Purchase.)

LIST OF REFERENCES ON THE DELAWARE AND HUDSON COMPANY, APRIL 20, 1923.

Bureau of Railway Economics. Wash., D. C. (Gift.)

RAILWAYS OF SPAIN.

George L. Boag. Lond., 1923. (Purchase.)

REHABILITATION BY CO-OPERATION;

A Railroad Policy for New England. Joint New England Railroad Committee, June, 1923. Bost. (Gift.)

REPORT ON THE FORMATION OF TRANSVERSE FISSURES IN STEEL RAILS

And Their Prevalence on Certain Railroads. U. S. Interstate Commerce Commission. Wash., 1923. (Gift.)

SEPARATION OF STREET AND RAILROAD GRADES, PATERSON, N. J.

A Report of the City Plan Commission. Herbert S. Swan. Paterson, N. J., 1922. (Gift.)

DIE LINIENFÜHRUNG DER EISENBAHNEN.

By H. Wegele. Second Edition. Berlin u. Leipzig, Walter de Gruyter & Co., 1923. 110 pp., illus., diagrams, tab., 6 x 4 in., boards. 25 cents.

This book contains a very brief summary of the principles of railroad location and construction, revised to meet present conditions. The author discusses the problems of an economic and a technical nature that arise, the principles that govern transportation and the governmental regulations for railroad construction and operation in Germany. It furnishes a convenient reference book.

TIMOTHY HACKWORTH AND THE LOCOMOTIVE.

Robert Young. Lond., 1923. (Purchase.)

BUREAU OF PUBLIC ROADS.

By W. Stull Holt. (Inst. for Government Research. Service Monographs, No. 26.) Balt., Johns Hopkins Press, 1923. 123 pp., 9 x 6 in., cloth. $1.00.

A brief, but comprehensive description of the history, organization and purpose of the Bureau of Public Roads has been given herein. The author shows how it is organized and equipped, the funds at its disposal, and the manner in which these funds are used. A compilation of the laws governing the Bureau and a bibliography of publications about it are included.

REPORT ON THE WATER POWER AND STORAGE POSSIBILITIES OF THE HUDSON RIVER.

New York (State)-Water Power Commission. Albany, 1922. (Gift.)

MILITARY MOTOR TRANSPORTATION.

U. S. Coast Artillery School. 1923. (Gift.)

ELEMENTARY THERMODYNAMICS OF AUTOMOBILE ENGINES.

By Erwin H. Hamilton. N. Y., McGraw-Hill Book Co., 1923. 287 pp., illus., tab., 9 x 6 in., cloth. $3.00.

This book presents the fundamental principles of the thermodynamics of internal combustion engines, as used in automobiles, with sufficient detail to illustrate them properly, and is intended as a textbook for college students and as an advanced text for trade schools.

GRINDING OF METALS AND CLEANING OF CASTINGS.

Reference to the Effects on the Workers. Great Britain-Home Office. 1923. (Purchase.)

L'ÉLECTRO-SIDÉRURGIE; FABRICATION DE L'ACIER AN CREUSET.

Clausel de Coussergues. Paris. (Purchase.)

DIE SPEZIALSTÄHLE: IHRE GESCHICHTE EIGENSCHAFTEN,

Behandlung und Herstellung. G. Mars. Second Edition. Stuttgart, 1922. (Purchase.)

STEEL THERMAL TREATMENT.

By John W. Urquhart. N. Y., D. Van Nostrand Co., 1922. 336 pp., illus., tab., 9 x 6 in., cloth. $8.00.

Having been engaged for many years in the production of machinery and tools, the author has been under the necessity of putting to practical use all the recently introduced processes for the heat treatment of steel. This book describes the apparatus used for heat treatment, the processes, and their adaptation to various purposes. The physical and chemical phenomena that occur are explained, and an endeavor is made to co-ordinate the work of the laboratory and the factory.

FACTORY MANAGEMENT WASTES AND HOW TO PREVENT THEM.

By James F. Whiteford. N. Y., D. Van Nostrand Co. [1920]. 220 pp., charts, 9 x 6 in., cloth. $4.00.

Of the work of the average factory, about one-fifth deals with the processing and treatment of materials, and this is usually efficiently done in a well organized way. The remaining four-fifths of the work, dealing with the common things, is seldom well organized. It is here that the greatest wastes are to be found. It is the purpose of this book to discuss these wastes, their causes, detection, and remedies. The removal of them will, the author believes, remove some of the prevalent difficulties between employer and employed, manager and managed. The subjects discussed include works organization and management, production control, machinery, performance records, overtime, cost-finding, wages and profit sharing.

DAVISON'S TEXTILE "BLUE BOOK", 1923-24.

N. Y., Davison's Publishing Co., 1923. 1729 pp., maps, 9 x 7 in., cloth. $7.50.

The "Blue Book" is a comprehensive directory of American firms engaged in the textile industries, as manufacturers, dyers, bleachers, brokers, commission merchants, or dealers in raw or waste materials. The information on mills includes the location, capacity, number of employees, officials, capitalization, etc. The directory is classified by products and by location, and a name index is provided. A directory of supply dealers is included.

L'INDUSTRIE TEXTILE; LIN, CHAUVRE, JUTE, ETC.;

Dictionnaire des Termes Techniques: Francais, Anglais, Allemand et Italien. Paris. (Purchase).

ESTIMATING BUILDING COSTS.

By Charles F. Dingham. N. Y., & Lond., McGraw-Hill Book Co., 1923. 240 pp., tab., 7 x 4 in., fabrikoid. $2.50.

In preparing this volume, Mr. Dingman has had in mind the needs of the young man in the building business who wishes to become an estimator. Particular attention is given to the exposition of principles and to methods, so that the reader will be trained to analyze construction jobs into their components, to apply his cost data, adjusted to the conditions, to the necessary operations, and thus to calculate the cost of doing the work.

HEIZUNG UND LUFTUNG; Vol. 2.

By Johannes Kortüng. Berlin u. Leipzig, Walter de Gruyter & Co., 1923. 130 pp., illus., 6 x 4 in., boards. 25 cents.

Supplementing the recently published Vol. 1, which discussed modern theories of heating and ventilation, the present book describes practical methods for installing heating systems and ventilators. The treatment is brief, but clear, and is well illustrated.

CALCULATIONS IN HEATING AND VENTILATION.

By G. S. Coleman. N. Y., Longmans, Green & Co., 1923. 255 pp., diagrams, tab., 9 x 6 in., cloth. $5.00.

This textbook is intended primarily to provide a collection of suitable graded problems for advanced students in heating and ventilation. The introductory chapters review briefly the physical principles involved, after which the author takes up in detail the various types of heating and ventilation, the equipment, and the design and installation of plants. Attention is concentrated on the calculations involved.

SITE PLANNING IN PRACTICE.

By F. Longstreth Thompson. Lond., Henry Frowde, and Hodder & Stoughton, 1923. 257 pp., illus., plans, 9 x 6 in., cloth. $5.35. (Gift of Oxford University Press. American Branch.)

The subject discussed is not town planning as a whole, but that detailed branch of the subject which is concerned with the laying out of residential areas with a building density of about 12 houses to the acre. On this topic, the author has assembled much information on principles and practice, selected on the basis of experience in the field. The book is thoroughly illustrated with maps and photographs of British housing plans, suburbs, and garden cities. Contents: Housing Policy and Urban Development; Preliminary Survey; Regional Surveys; Town Surveys; Choice of Site; Development Plan; Preliminary Considerations; Classification and Design of Roads, Boulevards, and Parkways, Road Construction, Tree Planting; Arrangement of the Roads; Water Supply and Drainage; Open Spaces, Gardens and Allotments; Disposition of the Buildings; Index.

BASE MAP OF HISPANIC AMERICA.

American Geographical Society. 1923. (Purchase.)

LIFE AND TIMES OF ALVAH CROCKER.

William Bond Wheelwright. Bost., 1923. (Gift.)

Donations to the Reading Room

MANUAL OF INFORMATION ON CITY PLANNING AND ZONING,

Including References on Regional, Rural and National Planning. By Theodora Kimball. Cambridge, Harvard Univ. Press, 1923. 188 pp., 10 x 7 in., cloth. (Gift.)

The demand for collected current information on city planning and zoning has been brought to the attention of the author, and it has seemed, therefore, worth while to compile in book form the information necessary to answer the greater number of these inquiries. The first part of the book is directed more especially to those who desire to know what city planning is and what books and magazines to read concerning it. From the lists of references included in the Manual, libraries and plan commissions may select what they wish to buy, and, from its extensive bibliography, the city official may find precedent or parallel for his problems and the student a guide to matter for his essay or an outline for systematic reading. The bibliographical part of the book is probably the most comprehensive list of references available on the subject.

Current Civil Engineering Literature

Key to Abbreviated References to Publications Indexed*

Abbreviated References.	Publication.	Place.
Am. C. Inst.	*American Concrete Institute, Proceedings* (Y.)	Detroit
A. I. E. E.	*American Institute of Electrical Engineers, Journal* (M.)	New York
A. R. E. A.	*American Railway Engineering Association, Proceedings* (Y.)	Chicago
A. S. T. M.	*American Society for Testing Materials. Proceedings* (Y.)	Philadelphia
Am. Soc. C. E.	*American Society of Civil Engineers, Proceedings* (M.)	New York
Am. Soc. Mun. Impvts.	*American Society for Municipal Improvements, Proceedings* (Y.)	New York
Am. W. W. Assoc.	*American Waterworks Association, Journal* (Bi-M.)	Baltimore
Am. Wood Prs. Assoc.	*American Wood Preservers Association, Proceedings* (Y.)	Chicago
Ann. P. et C.	*Annales des Ponts et Chaussées* (Bi-M.)	Paris
Ann. T. P. Belg.	*Annales des Travaux Publics de Belgique* (Bi-M.)	Brussels
Assoc. Ing. Gand.	*Annales de l'Association des Ingénieurs sortis des Ecoles Spéciales de Gand* (Q.)	Ghent
Bost. Soc. C. E.	*Boston Society of Civil Engineers, Journal* (M.)	Boston
Can. Engr.	*Canadian Engineer* (W.)	Toronto
Cem. Eng.	*Cement and Engineering News* (M.)	Chicago
Cornell C. E.	*Cornell Civil Engineer* (M.)	Ithaca
Dock & Harbour	*Dock and Harbour Authority* (M.)	London
Eng.	*Engineering* (W.)	London
Eng. & Contr.	*Engineering and Contracting* (W.)	Chicago
Eng. Inst. Can.	*Engineering Institute of Canada, Journal* (M.)	Montreal
Eng. N. R.	*Engineering News-Record* (W.)	New York
Engrs. Soc. Pa.	*Engineers' Society of Pennsylvania, Journal* (M.)	Harrisburg
Engrs. Soc. W. Pa.	*Engineers' Society of Western Pennsylvania, Journal* (M.)	Pittsburgh
Engr.	*Engineer* (W.)	London
Engrs. & Eng.	*Engineers and Engineering, Engineers' Club of Philadelphia* (M.)	Philadelphia
Gen. Civ.	*Le Génie Civil* (W.)	Paris
Gesund. Ing.	*Gesundheits Ingenieur* (W.)	Munich
Inst. C. E.	*Institution of Civil Engineers Minutes of Proceedings* (Q.)	London
Inst. Mun. & Co. Engrs.	*Institution of Municipal and County Engineers, Journal* (W)	London
Int. Ry. Cong. Assoc.	*International Railway Congress Association, Bulletin* (M.)	Brussels
Land. Arch.	*Landscape Architecture* (M.)	Harrisburg
Mech. Eng.	*Mechanical Engineering* (M.) *Journal of the American Society of Mechanical Engineers*	New York
Mil. Engr.	*Military Engineer* (M.)	Washington
Min. & Metal.	*Mining and Metallurgy* (M.) *American Institute of Mining Engineers*	New York
Mun. & Co. Eng.	*Municipal and County Engineering* (M.)	Indianapolis
N. E. W. W. Assoc.	*New England Water Works Association, Journal* (M.)	Boston
N. Y. R. R Club.	*New York Railroad Club, Proceedings* (M.)	Brooklyn
Oest. Ing. Arch. Ver.	*Oesterreichischer Ingenieur und Architekten Verein, Zeitschrift* (F.)	Vienna
Power	*Power* (W.)	New York
Rev. Gen.	*Revue Generale des Chemins de Fer* (M.)	Paris
Ry. Age	*Railway Age* (W.)	New York
Ry. Eng. & Main.	*Railway Maintenance Engineer* (M.)	Chicago
Ry. Rev.	*Railway Review* (W.)	Chicago
Schw. Bauz.	*Schweizerische Bauzeitung* (W.)	Zurich
Sci. Am.	*Scientific American* (M.)	New York
Soc. Ing. Civ. Fr.	*Société des Ingénieurs Civils de France, Mémoires et Comptes Rendus* (Q.)	Paris
Ver. deu. Ing.	*Verein deutscher Ingenieure, Zeitschrift* (W.)	Berlin
West. Ry. Club.	*Western Railway Club, Proceedings* (M.)	Chicago
West. Soc. Engrs.	*Western Society of Engineers, Journal* (M.)	Chicago
Zeit. Bau.	*Zeitschrift fur Bauwesen* (Q.)	Berlin
Z. d. Bauver.	*Zentralblatt der Bauverwaltung* (W.)	Berlin

* Y = Yearly; Q = Quarterly; M = Monthly; F = Fortnightly; W = Weekly.

A. Applied Sciences

a. Processes of Calculation

2. Graphical and Nomographical Processes

Theoretical Frequency Curves and Their Application to Engineering Problems.* Discussion: Frederic H. Hapgood and Richard T. Dana. Am. Soc. C. E. Sept., '23.

3. Stresses and Strains

The Approach of Flat Elastic Plates Under Load When Separated by a Ball of Similar Material.* John Goodman. Eng. Aug. 24, '23.

B. Applied Mechanics

a. Mechanics of Solids

1. Processes of Measurement

The Mathematical Theory of the Herbert Pendulum Hardness Tester.* Wm. J. Walker. Engr. Sept. 7, '23.

Strength of Used Elevator Cables.* C. W. Willits. Power Sept. 18, '23.

Nouvelles Méthodes pour l'Essai Mécanique des Tubes d'Acier.* (New Methods for Mechanical Testing of Steel Tubing.) Gen. Civ. Aug. 4, '23.

Le Pendule Herbert pour les Mesures de Dureté.* (The Herbert Pendulum for Measuring Hardness.) Gen. Civ. Aug. 25, '23.

2. Elastic Solids

Reciprocal Load Deflection Relationship for Structures.* C. E. Larard. Eng. Serial beginning Sept. 7, '23.

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k. Tunneling-Shields, Tunnels

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b. Iron or Steel Bridges and Viaducts

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H. Railroads. Street and Interurban Railways. Automobiles. Aeronautics

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J. Sewerage. Sewage and Refuse Disposal

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